



SCIENTIFIC RESEARCH OF THE SCO COUNTRIES: SYNERGY AND INTEGRATION

上合组织国家的科学研究：协同和一体化

Materials of the
International Conference

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这些会议文结合了会议的材料 – 研究论文和科学工作者的论文报告。它考察了职业化人格的技术和社会学问题。一些文章涉及人格职业化研究问题的理论和方法论方法和原则。

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Foreword

We thank all participants of our conference "Scientific research of the SCO countries: synergy and integration" for the interest shown, for your speeches and reports. Such a wide range of participants, representing all the countries that are members of the Shanghai Cooperation Organization, speaks about the necessity and importance of this event. The reports of the participants cover a wide range of topical scientific problems and our joint interaction will contribute to the further development of both theoretical and applied modern scientific research by scientists from different countries. The result of the conference was the participation of 73 authors from 7 countries (China, Russia, Uzbekistan, Kazakhstan, Azerbaijan, Tajikistan, Kyrgyzstan).

This conference was a result of the serious interest of the world academic community, the state authorities of China and the Chinese Communist Party to preserve and strengthen international cooperation in the field of science. We also thank our Russian partner Infinity Publishing House for assistance in organizing the conference, preparing and publishing the conference proceedings in Chinese Part and English Part.

I hope that the collection of this conference will be useful to a wide range of readers. It will help to consider issues, that would interest the public, under a new point of view. It will also allow to find contacts among scientists of common interests.

Fan Fukuan,

Chairman of the organizing committee of the conference

"Scientific research of the SCO countries: synergy and integration"

Full Professor, Doctor of Economic Sciences

前言

我们感谢所有参加本次会议的“上海合作组织国家的科学研究：协同作用和整合”，感谢您的演讲和报告。代表所有上海合作组织成员国的广泛参与者都谈到此次活动的必要性和重要性。参与者的报告涵盖了广泛的主题性科学问题，我们的联合互动将有助于不同国家的科学家进一步发展理论和应用的现代科学研究。会议结果是来自7个国家（中国，俄罗斯，乌兹别克斯坦，哈萨克斯坦，阿塞拜疆，塔吉克斯坦，吉尔吉斯斯坦）的83位作者的参与。

这次会议的召开，是学术界，中国国家权力机关和中国共产党对维护和加强科学领域国际合作的高度重视的结果。我们还要感谢我们的俄罗斯合作伙伴无限出版社协助组织会议，准备和发布中英文会议文集。

我希望会议的收集对广大读者有用，将有助于在新的观点下为读者提供有趣的问题，并且还将允许在共同利益的科学家中寻找联系。

范福宽，
教授，经济科学博士，中国科学院院士，会议组委会主席“上合组织国家科学研究：协同与融合”

俄罗斯银行作为调节通胀工具的主要利率
**THE KEY INTEREST RATE OF THE BANK OF RUSSIA
AS A TOOL TO REGULATE INFLATION**

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注解。央行的利率政策是实施货币政策最重要的市场工具之一。它表现在对中央银行官方基准利率的建立和定期审查以及主要业务的利率。俄罗斯银行的方向使用关键利率来调节该国的通货膨胀率，并声称使用该工具对抗通货膨胀的有效性。但是，这不是真的。影响我国通货膨胀水平的因素还有很多。

关键词：经济增长，俄罗斯银行货币政策，货币政策工具，关键利率，通货膨胀，人口实际收入。

Annotation. *The interest rate policy of the central bank is one of the most important market instruments for conducting monetary policy. It is expressed in the establishment and periodic review of the official base rates of the central bank, as well as the rates for its main operations. The direction of the Bank of Russia uses a key interest rate to regulate the rate of inflation in the country and claims the effectiveness of using this tool in fighting inflation. However, this is not quite true. There are much more factors that influence the level of inflation in our country.*

Keywords: *economic growth, Bank of Russia monetary policy, monetary policy instruments, key interest rate, inflation, real incomes of the population.*

The main purpose of the life of any state is economic growth. This concept by historical standards is a new phenomenon, perhaps it is characteristic only for the last three centuries [9, p. 653-654; 4, p. 365-366; 6, p.328-329; 5, p. 165-166]. It should be noted that growth is a multilateral process. At the same time, no single figure can reflect a variety of total growth. And yet, we believe that the best indicator reflecting economic growth should be the change in the total gross domestic product (GDP) over a certain period and the increase in real GDP per capita over a certain period. Since the period of research in our article is a relatively short period

from 2013 to 2018, the second indicator (increase in real GDP per capita), in our opinion, can be neglected. We assume that the population during this period only increased slightly.

Regarding the dynamics of changes in the value of GDP in Russia in 2008-2018, we present it in table 1.

Table 1. Dynamics of changes in the GDP of the Russian Federation in 2008-2018 [3, p. 5]

Years	GDP growth rate in percents
2008	5,2
2009	- 7,8
2010	4,5
2011	4,3
2012	3,7
2013	1,8
2014	0,7
2015	- 2,5
2016	0,3
2017	1,5
2018	2,3

As we see from table 1, we can divide the whole period studied by us into two parts. From 2013 to 2015, the growth rate of GDP went down from 1.8 to - 2.5%. But from 2015 to 2018, Russian GDP went from - 2.5% in 2015 to 2.3% in 2018. The study period we selected from 2013 to 2018 is interesting for us for three reasons.

First, as a result of the global financial crisis of 2008–2009, our country's economy in 2009 recorded the largest decline in GDP by 7.8% among all countries. In 2010, we had a growth of GDP by 4.5%, and then again fall to 1.8% in 2013. This fall was easily explained by many experts as a consequence of the global financial crisis.

Secondly, in 2014, a new crisis began in our country, which this time was of a purely national character, but depended on the world market situation (the decline in world energy prices). And also, to a decisive extent, it was due to the introduction of personal sanctions against the closest circle of the president and sectoral sanctions against individual enterprises and sectors of our economy, primarily the military-industrial complex.

Third, in the middle of 2013, the leadership of the Central Bank of the Russian Federation changed: instead of Sergei Mikhailovich Ignatiev, who resigned, Elvira Sahipzadovna Nabiullina was chaired. This personnel appointment in the management of the Bank of Russia was followed by major changes in its monetary policy.

We consider it necessary to recall that the impact of the subjects of monetary policy on its objects is carried out using a set of specific tools, one of which is the central bank's interest policy [1, p. 4], i.e. change in the mechanism of borrowing funds by commercial banks from the central bank.

It seems to us compulsory in the framework of the research we are conducting in this article to analyze the change in the key interest rate by the Central Bank of the Russian Federation in 2013-2018. The dynamics of changes in key interest rates are reflected in table 2.

Table 2.
Dynamics of changes in the key interest rate of the Bank of Russia in 2013 - 2018 [8, p. 67]

Validity	% per annum
16.09.2013 – 02.03.2014	5,50
03.03.2014 – 27.04.2014	7,00
28.04.2014 – 27.07.2014	7,50
28.07.2014 – 04.11.2014	8,00
05.11.2014 – 11.12.2014	9,50
12.12.2014 – 15.12.2014	10,50
16.12.2014 – 01.02.2015	17,00
02.02.2015 – 15.03.2015	15,00
16.03.2015 – 04.05.2015	14,00
05.05.2015 – 15.06.2015	12,50
16.06.2015 – 02.08.2015	11,50
03.08.2015 – 13.06.2016	11,00
14.06.2016 – 18.09.2016	10,50
19.09.2016 – 26.03.2017	10,00
27.03.2017 – 01.05.2017	9,75
02.05.2017 – 18.06.2017	9,25
19.06.2017 – 17.09.2017	9,00
18.09.2017 – 29.10.2017	8,50
30.10.2017 – 17.12.2017	8,25
18.12.2017 – 11.02.2018	7,75
12.02.2018 – 25.03.2018	7,50
26.03.2018 – 16.09.2018	7,25
17.09.2018 – 16.12.2018	7,50
17.12.2018 -	7,75

For clarity, we transform the table 2 we cited into figure 1. Which allows us to see that, starting from September 16, 2013 to December 16, 2014, the key interest rate of the Bank of Russia increased from 5.5 to 17%. The policy of the Bank of Russia to establish a key interest rate in itself is of particular interest. The fact is that until 2013 there was no key interest rate, but there was a refinancing rate, which at the time of introduction of the key interest rate was equal to 8.25%. This maneuver of the management of the Bank of Russia in the person of E.S. Nabiulina was very interesting. At a rate of 5.5%, loans were issued to commercial banks, and the collection of fines and penalties was made at a rate of 8.25%.

The introduction of a key interest rate in some inexplicable way coincided with the refusal of the Bank of Russia to maintain the national currency. Meanwhile, this is the first goal of its activities under the Federal Law “On the Central Bank of the Russian Federation (Bank of Russia)” [1, p. 4]. In fact, the Bank of Russia implements its monetary policy within the framework of establishing the basic level of inflation, its main goal is to protect and ensure the stability of the ruble by maintaining price stability, that is, sustainably low inflation.

However, the combination of these two factors: the low key interest rate and the Bank of Russia refusing from foreign exchange interventions led commercial banks to borrowing resources from the central bank at 5.5% and invest these cheap resources in the purchase of foreign currency. The rate of the American dollar and the euro began to grow at a rate of 1–1.5% per week, which in terms of annual interest meant a yield of 52–78% per annum. Borrowing at 5.5% and getting at the exit 52 - 78% in just one week is an extremely profitable investment of credit resources for any commercial bank.

Such a policy, quite expectedly, led to the devaluation of the Russian ruble more than twice, which is clearly seen from table 3.

Table 3.

Dynamics of changes in the US dollar against the Russian ruble in 2012 - 2019, established by the Bank of Russia [11]

Date	The amount of Russian rubles for \$ 1
01.01.2012	32,1961
01.01.2013	30,3727
01.01.2014	32,6587
01.01.2015	56,2376
01.01.2016	72,9299
01.01.2017	60,6559
01.01.2018	57,6002
01.01.2019	69,4706

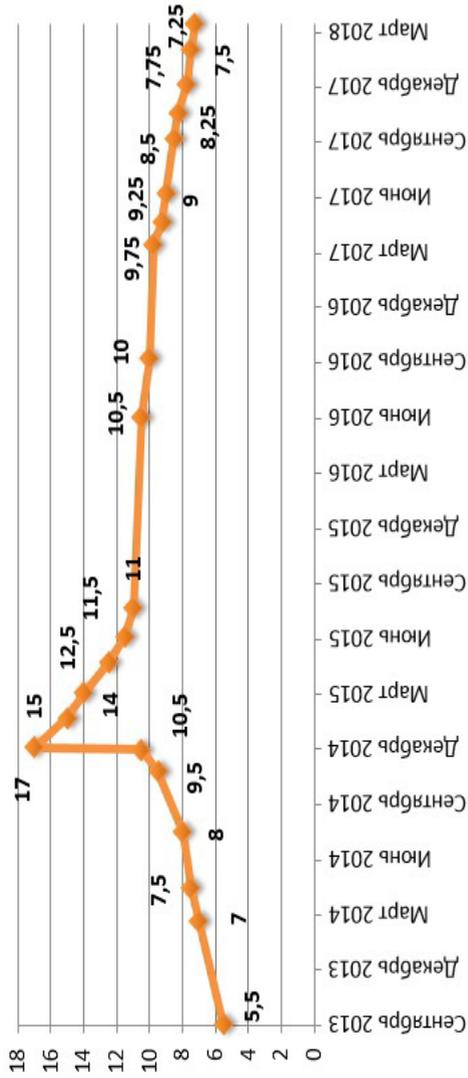


Figure 1 - the Dynamics of changes in the key rate of the Bank of Russia in 2013-2018 [8, p. 67].

The Bank of Russia conducted all its changes in the key interest rate under the flag of fighting inflation. To consider the Bank of Russia policy on combating inflation, it is necessary to consider the dynamics of changes in the inflation rate in the period under consideration. We can see this in table 4. We note that the period of “fighting inflation” of the Bank of Russia in 2013–2015 by raising the key interest rate was accompanied by an increase in inflation from 6.5% in 2013 to 12.9% in 2015.

Table 4. Dynamics of changes in the level of inflation in the Russian Federation in 2008-2018, as a percentage [10, p. 24]

Years	Inflation rate in percents
2008	13,3
2009	8,8
2010	8,8
2011	6,1
2012	6,6
2013	6,5
2014	11,4
2015	12,9
2016	5.4
2017	2,5
2018	4,3

This phenomenon was explained quite simply by sober-minded economists. For example, the head of the "Raft Leasing" Irkutsk leasing company, Elena Lantsova, says: “If the Bank of Russia raised the key rate by 0.25 - 9.5 percentage points, then the banks immediately by two percentage points, which they added to their rates, respectively, increasing it even more” [2, p. 3]. If we proceed from this logic, we can conclude that the Bank of Russia, by its actions to increase the key interest rate, brought the situation to an unprecedented increase in inflation, caused by the increase in production costs.

We are sure, that the rate of inflation in our country depends not only on the size of the key interest rate, which is set by the Bank of Russia, but also on such an indicator as real incomes of the population. As can be seen from table 5, we have shown, the real incomes of the population have been falling for the last five years. The growth of inflation results in a decrease in real incomes of the population. With a decrease in real incomes of the population, the demand for goods and services falls. This means that the decline in real incomes of the population is a serious factor affecting the decrease in inflation. And when, by their actions, the Bank of Russia in 2015 brought the inflation rate to 12.9%, then real incomes of the population decreased by 3.2%. In this regard, the fall in the effective demand of the population began, which led to a decrease in inflation, but not as a result of “successful” monetary control, but due to a decrease in consumer demand.

Table 5. Dynamics of changes in the level of real incomes of the population in the Russian Federation in 2008-2018 in percent

Years	Rates of change in the level of real income,%
2008	2,4
2009	3
2010	5,9
2011	0,5
2012	4,6
2013	4
2014	-0,7
2015	-3,2
2016	-5,6
2017	-1,3
2018	-0,2

In a market economy, another factor affecting the decline in real incomes of the population is unemployment. If crisis phenomena begin to appear in any market economy, then employers tend to dismiss part of the staff due to a decrease in demand for their goods and services. This is what causes the decline in real incomes of the population. Russia has its own characteristics: in our country, employers do not follow the path of dismissal, but, more often, the way of reducing the amount of wages, which, in essence, is hidden unemployment. At the same time, the level of statistical unemployment remains at the same level and even decreases over the past five years, which we see from table 6.

Table 6. Dynamics of changes in the unemployment rate in Russia in 2010-2018 [7, p. 4]

Years	Unemployment rate of change in percentage
2010	7,3
2011	6,5
2012	5,5
2013	5,5
2014	5,2
2015	5,6
2016	5,5
2017	5,2
2018	4,8

In organizing the fight against inflation, the Bank of Russia proceeds from the fact that the higher the key rate, the higher the interest that commercial banks charge for their loans provided to enterprises, organizations, the public, and vice versa. But at the same time, there are less willing to take such loans. At the same time, the Bank of Russia believes that the impact on inflation is obvious: cheap loans at low interest rates lead to an increase in freely circulating money supply, which leads to an increase in inflation. Expensive loans and public interest in maintaining their savings reduce the amount of money in circulation and reduce the percentage of inflation..

Considering the impact of the key rate on inflation, it is important to understand that only planned actions and calculations can guarantee the normal development of economic institutions. If the key rate remains high for a long time, the economy may begin to stagnate: business and industry will lose the opportunity to grow, the people who put money on deposits will spend less, production of goods will be unprofitable, etc. In principle, we observe this today in the development of the Russian economy. Inflation will decline, the national currency will be expensive, loans become unprofitable. A decrease in liquidity may result in a default, both in a single banking organization and in the country as a whole.

In order to realistically evaluate the decisions of the Board of Directors of the Bank of Russia on the decision on the size of the key rate and its impact on the inflation rate, we consider it necessary to analyze the changes in the key interest rate and the changes in the inflation rate in 2013–2018. These indicators are shown in table 7.

Table 7
*The impact of changes in the key rate of the Bank of Russia
 on the level of inflation in 2013-2018. [8, p. 67]*

Period	2013		2014		2015		2016		2017		2018	
	Inf	K.ra	Inf	K.ra	Inf	K.ra	Inf	K.ra	Inf	K.ra	Inf	K.ra
January	1,0	-	0,6	5,50	3,9	17,00	1,0	11,00	0,6	10,00	0,3	7,75
February	0,6	-	0,7	5,50	2,2	15,00	0,6	11,00	0,2	10,00	0,2	7,50
March	0,3	-	1,0	7,00	1,2	14,00	0,5	11,00	0,1	9,75	0,3	7,50
April	0,5	-	0,9	7,50	0,5	14,00	0,4	11,00	0,3	9,75	0,4	7,25
May	0,7	-	0,9	7,50	0,4	12,50	0,4	11,00	0,4	9,25	0,4	7,25
June	0,4	-	0,6	7,50	0,2	11,50	0,4	11,00	0,6	9,00	0,5	7,25
July	0,8	-	0,5	7,50	0,8	11,50	0,5	10,50	0,1	9,00	0,3	7,25
August	0,1	-	0,2	8,00	0,4	11,00	0,0	10,50	-0,5	9,00	0,0	7,25
September	0,2	5,50	0,7	8,00	0,6	11,00	0,2	10,00	-0,1	8,50	0,2	7,50
October	0,6	5,50	0,8	8,00	0,7	11,00	0,4	10,00	0,2	8,50	0,4	7,50
November	0,6	5,50	1,3	9,50	0,8	11,00	0,4	10,00	0,2	8,25	0,5	7,50
December	0,5	5,50	2,6	10,50	0,8	11,00	0,4	10,00	0,4	7,75	0,8	7,75
Totall for year (December to December)	6,50	5,50	11,4	17,00	12,9	11,00	5,4	10,00	2,5	7,25	4,3	7,75

As can be seen from table 7, over the past five years, the Board of Directors of the Bank of Russia changed the key interest rate 24 times: the lowest value was 5.50% per annum, and the top one - 17.00% per annum. The Bank of Russia increased the key interest rate eight times, reduced 15 times. It should be noted that every change in the key rate should have led to a decrease in inflation. Meanwhile, as can be seen from table 7, only seven times the change in the key interest rate led to a real decrease in inflation (we marked these changes in green), in other cases - to an increase (we marked these changes in maroon).

Based on this, it can be concluded that an increase in the key interest rate by the Bank of Russia does not always lead to a decrease in consumer prices. Moreover, most often this leads to their increase. It follows that the Bank of Russia's key rate changes first, and then the rate of inflation changes. In other words, decisions of the Board of Directors of the Bank of Russia do not always lead to a decrease, and more often lead to an increase in inflation and risks associated with it.

At the end of 2018, the inflation rate was 4.3% at a key rate of 7.75% per annum. This means that the Bank's forecast of annual inflation of 4% was not reached. The Bank of Russia considers it expedient to raise the key rate in the future in order to reduce inflation risks. As you know, raising the key rate leads to a rise in the cost of resources for enterprises, which means that entrepreneurs will begin to raise prices, as well as raising the VAT rate will lead to higher prices.

From this we can conclude that, in 2019 it is not possible to avoid an increase in consumer prices, which will lead to an increase in inflation and devaluation risks. At the same time, there is no doubt that the economic activity of the population will fall, adversely affecting the development of the domestic economy.

In order to improve the efficiency of monetary policy instruments, the Bank of Russia is likely to continue work aimed at increasing the availability of refinancing operations for credit institutions, including the possibility of expanding the list of assets used as collateral for these operations, including gold.

Further development of the interest rate policy of the Bank of Russia, in our opinion, should be aimed at improving the system of monetary regulation tools, narrowing the interest rate corridor, and introducing a refinancing system under a single collateral pool. In our opinion, the concept of monetary and credit regulation of the Bank of Russia should be radically changed, aimed not at combating inflation, but at counteracting the looming slowdown in economic growth and rising unemployment.

When deciding on the choice of monetary policy instruments, the Bank of Russia should proceed from both current tasks and tasks set for the medium term. These tasks, in our opinion, should include the creation of conditions for a gradual reduction in inflation rates and the restoration of sustainable economic growth, including the formation of prerequisites for the redistribution of assets of credit institutions in favor of the real sector of the economy.

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实施部门进口替代战略是创新发展的一个有希望的方向：关键部门
**IMPLEMENTATION OF SECTORAL IMPORT SUBSTITUTION
STRATEGIES AS A PROMISING DIRECTION FOR INNOVATIVE
DEVELOPMENT: CRITICAL SECTORS**

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注解。 本文讨论了一些部门进口替代战略的实施方向。 已经确定了俄罗斯经济的分支机构，其中可以将进口产品的替代品视为确保该国国家和供应安全的关键点。 给出了这些关键行业创新发展的可能方向。 展示了在创新产业发展和系统分析方法和情景方法的实际应用的基础上实施部门进口替代战略的前景。

关键词：俄罗斯经济，部门现代化，进口替代战略，系统分析，情景方法。

Annotation. *The article discusses the individual directions of implementation of some sectoral import substitution strategies. The branches of the Russian economy have been identified, in which the substitution of imported products can be considered as critical points for ensuring the national and supply security of the country. The possible directions for the innovative development of these critical industries are given. The prospects for the implementation of sectoral import substitution strategies based on the development of innovative industries and the practical application of the system analysis methodology and scenario approach are shown.*

Keywords: *Russian economy, sectoral modernization, import substitution strategies, system analysis, scenario approach.*

Introduction

The development and implementation of sectoral import substitution strategies were the response of the country's leadership and the leadership of main sectors of the economy to the policy of sanction restrictions implemented in relation to Russia, starting from March 2014 to the present moment, by the United States, and their partners. Initially it was expected that the mechanisms for implementing sectoral import substitution strategies would be determined mainly by the need to solve problems in terms of ensuring the national security of the country. *Import*

substitution was presented as a complex of temporary measures of a predominantly administrative nature, which in a short time must ensure the modernization of the entire economy of the country under the negative impact of sanctions.

At the same time, market methods for ensuring modernization and strategic development of the sectoral economy faded into the background. Priority was given to direct support and stimulation from the state of industries and enterprises that were able to quickly eliminate the critical points of the development of the Russian economy from the standpoint of ensuring security and maintaining a stable socio-economic position of our country. In 2014-2017, this approach became the real basis for the modernization and strategic development of leading industries using the project management methodology. However, a number of sectors of the Russian economy remains dependent on the supply of products, technologies, equipment and components of foreign production. We have classified such industries as critical. In this article, the authors presented their vision of solving existing problems with import substitution in these industries based on their innovative development and practical application of the system analysis methodology and scenario approach.

Purpose of study

The main objective of this study is to identify critical sectors for the development of the Russian economy and the possible directions of their innovative development in order to determine the prospects for sectoral modernization based on the scenario approach to the implementation of import substitution strategies in the long term period.

Research methods

As a methodological basis of the study, we used methods of strategic and system analysis, as well as a scenario approach, which allow us to substantiate promising directions for achieving our goals of replacing foreign products, equipment, and components with domestic counterparts. When developing and implementing sectoral import substitution strategies, the importance of strategic analysis becomes especially important. Based on its results, information is generated that is necessary to define goals, select directions and justify the implementation of import substitution sectoral strategies. The strategic analysis is aimed at ensuring the competitive advantages of the domestic economy in the conditions of market competition, taking into account the negative influence of the external environment in the form of sanction restrictions and other factors. As one of the methods of system analysis that ensures the effectiveness of the implementation of sectoral import substitution strategies, it is advisable to use the scenario approach method. This method allows to create some set of acceptable alternative scenarios for the implementation of sectoral import substitution strategies and to choose the best options, taking into account the specified restrictions.

Materials and results of the study

With the help of the above methods, three fundamentally critical sectors were identified for import substitution of products from the standpoint of ensuring the national security of our country. These include: the development of domestic information and communication technologies and software; development of domestic production of power equipment; development of the production of microelectronics components. Elimination of the critical lag of the Russian economy from the developed Western countries can be achieved through the development and implementation of import substitution strategies in these sectors based on their innovative development and practical application of the system analysis methodology and scenario approach. At the same time, the issues of economic efficiency of the implementation of these strategies can and should be considered as paramount.

Let us briefly consider the possible directions for eliminating critical points in the development of said branches of the Russian economy.

1. The development of domestic information and communication technologies and software (SW) is primarily aimed at supporting the development of industrial production in the fuel and energy sector and communications between banking institutions and their counterparties in the financial sector. Elimination of critical points in this industry is undoubtedly a fundamental condition for ensuring the national security of the country. The implementation of import substitution strategies in this industry should be accelerated as much as possible in order to get an acceptable result in a short period of time, in which domestic products may be temporarily inferior in quality to foreign counterparts, but will ensure its complete replacement.

However, at present, Russian-made software dominates only in the category of anti-virus programs. Kaspersky Lab and DrWeb products jointly occupy 65% of this segment of the Russian market, but the Slovak company ESET is also present, with a share of about 12% [7, p. five].

Under the optimistic scenario of the implementation of the industry import substitution strategy, the share of import software in the category “Services used in production management (e-mail and workflow, search browsers, etc.)” will be reduced to 25% by 2020 and to 10% by 2025 [7, p. five]. Although for each of the subgroups of this category, quite high-quality Russian analogues have already been developed. The main indicators of import substitution for foreign-made SW by Russian counterparts are defined by Order №96 of the Ministry of Communications and Mass Media of April 1, 2015. According to these indicators, the dependence on foreign-made SW in leading industries should be reduced from 80-95% (as of late 2015) to 60-75% in 2020 and 50% in 2025 [1, p. 32].

However, most SW products in the global industry are developed by free international communities of programmers. These include communities such as Linux,

GNU, Apache, or PostgreSQL, in which Russian specialists are represented. Consciously ignoring this tendency and creating only Russian analogues in the presence of SW that already exists and is used throughout the world would not be entirely correct. At the same time, the SW used by the authorities and security services is included in the information security perimeter, which at least means its production is carried out in domestic enterprises and using Russian technologies.

As global investment resources are increasingly transformed into the plane of digital financial communications, its ability to maintain stability under the negative impact of sanction restrictions, external instability and pressure, but effectively integrate into these processes without detriment to its development becomes a determining factor in ensuring the stability of the Russian economy. In relation to the current situation in this industry, the key task of import substitution strategies will be to preserve and expand the national software development technologies, Russian standards and formats of its production and control over these communications with their help. At the same time, promotion of Russian software products to foreign markets is welcome, even if on a small scale.

Created as part of the implementation of sectoral import substitution strategies, domestic digital technologies should move to foreign markets that are associated with financial communications. An example of such technologies can be considered the Russian system of cashless online payments - the National System of Payment Cards "Mir", which, under sanctions restrictions, can become the main alternative for a complex of financial communications, the payment formats of which currently fall under global control of the USA [4, p. 7]. As another example of the implementation of import substitution strategies for the production of SW, one can cite the "Advanta" system developed by the Russian company "Advanta Consulting". This system opens up new opportunities for the formation of plans and control over the implementation of projects on target indicators, as well as the organization of interdepartmental cooperation in solving various tasks of regional authorities. The "Advanta" system completely solves the task of replacing a SW Microsoft Project Server at a cost 3-5 times cheaper than foreign counterpart. However, the practical implementation of this direction in the framework of sectoral import substitution strategies requires not only political support, but also serious financial participation of the state.

2. The development of the production of power equipment with the aim of developing domestic production facilities for its production in the required range and on the basis of domestic technologies, primarily in the power industry, continues to be a critical point. The importance of the availability of domestic production facilities for the development of the production of power equipment - especially high-tech - is determined by the need to ensure the stability and independence of the leading sectors of the economy from the supply of imported equipment

in the event of force majeure. An example is the refusal of many large Western companies to conclude direct contracts for the supply of power equipment for the modernization of the energy networks of Crimea. In the presence of domestic industries capable of replacing imported equipment, this situation is likely to not even arise. In addition to this, it is necessary to correctly understand the current state of affairs in world markets, which not only does not reduce, but rather the opposite, increases the likelihood of a repetition of similar situations in the future.

The energy strategy of the Russian Federation for the period until 2030 as one of the most important tasks provides for the solution of the problem of import substitution of the production of power equipment. To this end, a policy has been developed at the state level to stimulate the development of the production of domestic energy equipment. Its implementation will allow, by 2030, to replace up to 95÷98% of foreign-made equipment with Russian-made equipment [3]. Currently, the Ministry of Industry and Trade of Russia has approved more than 20 sectoral strategies, which include more than 2,200 areas of incentives for the production of power equipment at domestic enterprises [2]. In 2016, the strategy of import substitution of power equipment for gas turbines was approved [6]. It includes a set of measures for the development of domestic production of gas turbine plants as a modern and environmentally friendly equipment, based on the forecast of demand for electrical energy until 2025. Each of the above documents provides for different scenarios for the implementation of import substitution strategies for the entire range of energy equipment.

The development of domestic production of equipment for the development of the Russian small energy sector should be another direction in the implementation of industry-specific import substitution strategies. To do this, it is advisable to initially rely on domestic energy technologies, including technologies based on alternative energy sources. The development of this direction is more long-term, its implementation involves obtaining economic benefits, it should focus on attracting private investment in the presence of substantial incentives from the state.

3. The development of domestic production of microelectronic components can also be attributed to critical sectors of the Russian economy. In this industry, the production of microelectronic components, both “military” and “civilian”, is important. The criticality of domestic production of microelectronic components can be determined within 25% of the domestic market with a small presence in foreign markets in such segments as ultra-protected components for the space industry. Unfortunately, our country is not in the best position to implement import substitution strategies in this industry. One of the reasons for this situation is the search for optimal organizational forms for the interaction of all performers. The country's leadership has a clear understanding of the priority development of domestic production of microelectronic components, although objectively this direction can be considered the most difficult.

The key role in overcoming the existing lag from the developed countries of the West will determine the competitiveness of manufactured products. It is inextricably linked with the high transparency of the world market for microelectronics components and the wide distribution of various delivery schemes. Therefore, Russian-made electronic components can successfully be present on the market in areas that do not directly affect the priorities of national security, only with their high competitiveness. The table shows the foreign and domestic levels of development of technologies for the production of microelectronic components [4, p. 17].

Table
*Levels of development of microelectronics technology
in Russia and in developed countries, 2015*

Russian level	Developed countries level
Achieved technology level: 130-90 nm	Achieved technology level: 22 nm (pilot / mass production)
Developed level of technology: 65-45 nm	Developed level of technology: 18-14 nm
Plate size used: 150-200 mm	Plate size used: 200-300 mm, planned 450 mm
Three-dimensional integration (limited scope of work)	Three-dimensional integration of heterogeneous (function / topology) crystals
248-nm KrF "dry" lithography 193-nm ArF "dry" lithography Development prospects: 193 nm - immersion lithography	193-nm ArF immersion lithography. Development: EUV lithography (13 nm)
Materials under study: graphene, carbon nanotubes, complex semiconductors	Materials under study: graphene, carbon nanotubes, complex semiconductors, fully depleted SOI

At present, both in terms of the achieved technological level and quality characteristics, domestic electronic components are significantly inferior to foreign counterpart. So, for example, if advanced Russian manufactures master technologies of the level of 90 nm on the plates of 200 mm, in developed countries the level of 22 nm on the plates up to 300 mm has already been mastered and the development of technologies of the level of 18-14 nm and transition to the plates of 450 mm in size have begun. At the same time, the development of Russian technologies at the level of 65-45 nm has already begun. In other words, the developed nomenclature of electronic components of domestic production is wide enough, but in terms of technology it lags behind foreign analogues. The implementation of the developed strategy for the development of the industry until 2030 is intended to eliminate this lag [5].

The development of the Russian microelectronic industry is closely connected with the implementation of sectoral import substitution strategies. But to achieve the development and production of the entire nomenclature of components of an electronic database only on its own is almost impossible because of the long time and high cost of these processes. Many industry experts suggest reorienting to the production of new technologies. Therefore, in 2015, the Government of the Russian Federation decided to develop a component electronic base for four key areas of microelectronics in the civil sector - the financial sector, transport, telecommunications and electronic document management.

Discussion

It seems expedient when implementing import substitution strategies in each of the above sectors to focus on obtaining economic benefits in such a critical area as digitalization of industrial production, including the replacement of foreign SW with domestic products. This aspect cannot be ignored in any way, especially considering the current foreign policy conditions. At present, the strategic prospects for the development of digitalization in our country allow us to develop a fully Russian system for planning and implementing priority social projects, as well as investment attraction projects. The transition to such a system in the near future will allow concentrating investment resources on such technological chains of added value, which are important for the development of the Russian economy and are capable of increasing profitability and reducing the cost of products, as well as a significant increase in the level of substitution of foreign products, equipment and their domestic components analogues whose quality is fully consistent with the requirements of international standards.

Conclusion

The results obtained in the course of the research allow us to draw the following conclusions.

1. In 2014-2017, the development and implementation of sectoral import substitution strategies became the real basis for the modernization and strategic development of leading sectors of the economy. For this purpose, the methods of strategic and system analysis, as well as the scenario approach, were used.

2. Using these methods, three fundamentally critical sectors were identified for import substitution of foreign-made products with domestic counterparts in order to ensure the national security of our country. The analysis of the current situation in each of the critical sectors is carried out, the main directions for increasing the level of substitution of foreign products, equipment and components with their domestic counterparts as part of the implementation of industry import substitution strategies are shown.

Thanks

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实施部门进口替代战略是创新发展的重要方向：有前途的部门
**IMPLEMENTATION OF SECTORAL IMPORT SUBSTITUTION
STRATEGIES AS AN IMPORTANT DIRECTION FOR INNOVATIVE
DEVELOPMENT: PROMISING SECTORS**

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注解。 本文讨论了一些部门进口替代战略的实施方向。 已确定俄罗斯经济的分支机构，替代进口产品，其中可视为确保该国国家和粮食安全的有希望的领域。 显示了改善这些部门生产发展的可能方向。 在创新产业发展和系统分析方法和情景方法的实际应用的基础上实施部门进口替代战略的前景得到了证实。

关键词：俄罗斯经济，部门现代化，进口替代战略，系统分析，情景方法。

Annotation. *The article discusses the individual directions of implementation of some sectoral import substitution strategies. The branches of the Russian economy have been identified, the substitution of imported products in which can be considered as promising areas for ensuring the national and food security of the country. The possible directions for improving the development of production in these sectors are shown. The prospects for the implementation of sectoral import substitution strategies based on the development of innovative industries and the practical application of the system analysis methodology and scenario approach are substantiated.*

Keywords: *Russian economy, sectoral modernization, import substitution strategies, system analysis, scenario approach.*

Introduction

When developing and implementing sectoral strategies for import substitution in 2014, they were presented as a complex of temporary measures of primarily administrative nature, which in a short time was supposed to ensure the modernization of key sectors of the country's economy in the face of the negative

impact of sanction restrictions. It is quite natural that with this approach import substitution was not considered as a long-term strategy for the development of the Russian economy. However, at present, the basic provisions of this approach have undergone significant changes and the priority now is the use of market methods and approaches in the modernization and strategic development of branches of the Russian economy. This reorientation was predetermined, on the one hand, by the need to increase the competitiveness of the Russian economy in world markets, and on the other hand, to fully use domestic opportunities to increase the potential of import substitution not only in the leading, but also in all sectors of the Russian economy.

The above circumstances predetermine the relevance of the development of scenario approaches to the implementation of the modernization processes of the Russian economy and sectoral import substitution strategies in the long-term period from 2020 to 2025, taking into account the increased efficiency in the use of resource, personnel and investment potential

Purpose of study

The main objective of this study is to identify promising areas of development of the Russian economy and the possible directions of their innovative transformation, as well as to determine the prospects for sectoral modernization based on a scenario approach to the implementation of import substitution strategies in the long term.

Research methods

We used methods of strategic and system analysis, as well as the scenario approach, which allow us to justify promising directions for achieving our goals. When developing and implementing sectoral import substitution strategies, the meaning of strategic analysis becomes especially important. The strategic analysis is aimed at ensuring the competitive advantages of the domestic economy in the conditions of market competition, as well as taking into account the negative influence of the external environment in the form of sanction restrictions and other factors. The method of the scenario approach allows you to form a set of acceptable alternative scenarios for the implementation of sectoral import substitution strategies and to choose the best options, taking into account the specified constraints. With regard to the implementation of import substitution sectoral strategies, the scenario approach allows to logically link the composition of activities within the sectoral import substitution strategies and management decisions on their implementation, which contribute to the most effective achievement of the goals, as well as obtaining economic benefits and strengthening the competitive position of an industry. The development of scenarios makes it possible to substantiate each of the options more wisely, to formulate plans for the implementation of individual measures within the framework of industry-specific import substitution strategies.

Ensuring the competitiveness of the Russian economy largely depends on its ability to adapt to the dynamics of the adverse influence of environmental factors, deepen the development of market forms and methods of management, the transition to an economy based on knowledge and its digitalization. To achieve this goal in the context of the negative impact of sanction restrictions, it is necessary to use the above methods when developing and implementing industry import substitution strategies that should play a key role in ensuring the growth of the Russian economy.

Materials and results of the study

Using these methods, a number of promising industries were identified for import substitution of foreign products with domestic products in order to ensure the national security of our country. One of them is the development of modern biotechnology for agriculture. The development and introduction of modern biotechnologies and domestic equipment for the agro-industrial complex is designed to ensure the food security of our country under the conditions of sanction restrictions. The importance of this direction in the implementation of sectoral strategies for import substitution has long been recognized at all levels, but the complete elimination of this critical point in the agricultural sector requires some time. However, the priority in its development remains for the provision of financial and administrative support from the state. For the truly effective development of this direction in the framework of the implementation of import substitution strategies, the formation of Russian biotechnologies should not be considered as a possible subject of trade with Western countries. The imposition of sanction restrictions against our country and a reciprocal food embargo by Russia suggests that any policy change in this industry rather quickly affects the economic situation of counterparties. Therefore, in modern conditions of sanction wars, it is not necessary to expect the development of full-fledged food trade of Western countries with Russia.

In many respects, the Russian agro-industrial complex has come to the forefront in recent years. In terms of its growth, it is not inferior to developed countries, and some of them even surpassed. A significant increase in the efficiency of storage and processing of raw materials and products in most agricultural enterprises has become a reality. In modern conditions, the agro-industrial complex is becoming a driver for the development of other sectors of the economy, since it managed to avoid a decline in production, despite the tightening of sanction restrictions. At the same time, agricultural producers of different types have different needs in the use of modern biotechnologies, and the insufficient level of their introduction in small and medium-sized farms can become a serious problem when modernizing their production. This conclusion is confirmed by the data given in the table [1, p. 5].

Table

The needs of agricultural producers in modern biotechnology

Modern biotechnology	Personal farms	Farms, individual entrepreneurs	Medium-sized agricultural enterprises and cooperatives	Large agricultural holdings
1	2	3	4	5
"Organic" agriculture	M	H	M	L
Exact agriculture	L	L	M	H
Large-scale conveyor agriculture	L	L	L	H
No-till farming	L	L	H	H
Loose livestock housing	M	H	H	H
Drip irrigation	L	M	M	H
Individual preparation of fertilizer mixtures	L	L	H	H
Integrated Pest Control	M	M	H	H
Urbanized agriculture	L	L	L	H
Automation and computerization	L	L	M	H
Waste-free (circular) agriculture	H	H	H	M
Biofuels	L	L	H	H

Potential for technology implementation: H – high; M – medium; L – low.

There is only one conclusion that follows from the above: in order to ensure its food security, Russia must intensively develop modern biotechnologies and introduce equipment of domestic production for the fabrication of agricultural products in the required volumes.

For most other sectors of the economy, the assessment of the implementation of import substitution strategies should be carried out according to key cost indicators that determine the effectiveness of the results obtained. Successful implementation of import substitution strategies can be achieved either by increasing production efficiency and management, or by creating new technological chains of added value that will ensure an inflow of investment in the industry through the sale of manufactured products and technologies in foreign markets. But in foreign markets, competition includes new features of the military-power and ideological orientation. Their presence is especially characteristic of markets where the positions of the USA and EU countries are strong.

The most important task of implementing sectoral import substitution strategies in the field of industrial production is the development of the domestic technological base in the oil and gas industry, primarily to replace the production of equipment for oilfield services, for which there is a significant lag behind developed countries. The determining factor for solving this problem is the development of long-term (5-7 years) plans for attracting investments (public, private, foreign, etc.). They will become a reliable guarantee for maintaining the competitiveness of the industry under the conditions of the “second hydrocarbon revolution” that may occur after 2025. Its key features will be the simultaneous sharp reduction in the market for traditional hydrocarbon energy and a significant increase in the cost of hydrocarbon production. The development of a domestic base of technologies for the extraction of difficultly recoverable hydrocarbon resources is already among the state priorities of particular importance. The domestic oil and gas industry should be prepared for such a scenario of development and implementation of relevant industry import substitution strategies.

Under the conditions of the negative impact of the sanction restrictions, the Russian economy has proved that it has not lost the ability to restore existing and create new technological chains for added value, oriented both to domestic and foreign markets. Successful implementation of sectoral import substitution strategies should be based on the development of existing “groundwork” in the industry, carried out simultaneously with the development of the knowledge economy and the digital economy. The methods used for this purpose make it possible to create new technological chains with high added value and profitability of production, which help to increase the competitiveness of products and attract extra-budgetary investments through their entry into foreign markets. The implementation of sectoral strategies for import substitution, especially in the leading sectors of the economy, can be greatly assisted by sound financial support from the state, which is necessary in the context of sanction restrictions.

At the same time, today, when implementing sectoral import substitution strategies, it is necessary to identify promising areas to stimulate the development of industrial production. One of them seems to be improving the quality of industrial products and export-oriented technologies. Its further development implies a transition from the export of individual products and technologies to the export of technological complexes, including services, and then to the export of industrial clusters that operate entirely on Russian technologies and equipment. Such “long” technological chains of creating new added value are successfully implemented in contracts for the construction of nuclear power plants abroad, as well as in the implementation of contracts for the sale and maintenance of weapons and military equipment produced in Russia. Next in turn is the implementation of similar contracts in other sectors of the Russian economy.

The main problem here is seen in the search for promising markets for the development of complex contracts as part of the implementation of sectoral import substitution strategies. In fact, the number of markets suitable for this is very limited, as a result of the sanction restrictions. As a rule, these can be the markets of developing countries, the main feature of which is associated both with unreliable solvency and with high internal and external risks. Practice shows, that ensuring the implementation of contracts for the export of industrial clusters that operate entirely on Russian technology and equipment, based only on commercial indicators, is rather difficult. This will require the creation of a new implementation model for export-oriented complex contracts as part of industry import substitution strategies. Approaches to the definition of profitability and return on investment in this model will be fundamentally different from the existing models today.

Discussion

The experience in the development and implementation of sectoral import substitution strategies obtained in 2015–2018 based on the application of methods of strategic and system analysis, scenario approach and project management made it possible to restore existing and create new technological chains of added value in most sectors of the Russian economy. This circumstance gives every reason to assume that the implementation of technological modernization of the domestic economy in a short time becomes quite real.

Conclusion

The results obtained in the course of the research allow us to draw the following conclusions.

1. The development and implementation of sectoral import substitution strategies became the real basis for the modernization and strategic development of leading industries. At the same time, methods of strategic and system analysis, as well as the scenario approach, were used quite successfully.

2. Using these methods, promising industries were identified for import substitution of foreign products with domestic products in order to ensure the national security of our country. The analysis of the current situation in some of the promising sectors has been carried out, and the main directions for their innovative development within the framework of the implementation of sectoral import substitution strategies are shown.

Thanks

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组织发展是一种自组织的过程
**ORGANIZATIONAL DEVELOPMENT AS A PROCESS OF SELF-
ORGANIZATION**

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注解。组织发展有外部和内部来源。后者被视为自我发展机制。同时，组织被认为是一个复杂的自组织动态系统，其发展路径由非线性关系和模式决定。这种方法的方法论基础是协同学。从协同学的角度出发，开辟了新的视角来理解组织变革的本质和机制。

关键词：复杂非线性系统，协同学，组织发展，变革管理

Annotation. *Organizational development has external and internal sources. The latter are considered as self-development mechanisms. At the same time, the organization is considered as a complex self-organizing dynamic system, the development path of which is determined by non-linear relationships and patterns. The methodological basis of such a methodology is synergetics. From the stand-points of synergetics, new perspectives are opened for understanding the essence and mechanisms of organizational change.*

Keywords: *complex nonlinear systems, synergetics, organizational development, change management*

With the advent and development in the 1990s of models for the development of dynamic nonlinear systems (synergetics), new perspectives arose for building a general concept of organizational change. In managerial analysis, identification and patterns of self-organization and self-development arose and began to develop fruitfully, which gave rise to optimism regarding the construction of a new organizational paradigm that considers organizational changes as self-organization processes subject to self-adjustment based on self-learning [12; 13; 15].

The use of the self-organization model can significantly increase the effectiveness of projects for changing organizations, considered as complex, quasi-stable and self-organizing systems. This model may be represented by the following provisions:

1. organization as a complex system demonstrates the properties of quasi-stability and adaptability: its homeostasis is maintained by constant changes;
2. the properties of a complex self-organizing system are not reduced to the sum of the properties of its parts;
3. there is a close interdependence between the parts of the organization as a complex system, and parts with the organization as a whole;
4. a complex system nonlinearly responds to external and internal disturbances deviating it from the state of dynamic equilibrium with the external environment;
5. the anisotropy of organizational changes as complex self-organizing systems is determined by the existence of attractors or areas of attraction of change paths.

Consider the content of these provisions.

1. Complex systems are quasi-stable: stability is visibility where changes are minor, non-obvious, and seem inconsequential. The traditional notion of equilibrium and stability of well-designed organizations raised one of the key questions of organizational theory to the surface: how and why are changes in organizations occur? Attempts to answer this question led to the emergence of a population ecology of organizations, [5; 8] studies of the institutional environment of organizations, [14] intra-organizational sources of change, [7] or research based on a combination of internal and external factors of change [3; 9].

Developing this approach, researchers of organizational complexity reformatted the traditional view of open systems, based on the ideas, first of all, of I. Prigogine that dynamic complex systems are “dissipative structures” that are characterized by self-organization and self-updating of organizational processes, which is accompanied by dissipativity (a decrease in the concentration level) of significant resource flows [4; 10]. Dissipative structures require that the flows of energy, information and resources that actually create self-organizing non-linear dynamic systems meet minimal resistance for their passage, thereby generating constant pressure in the direction of change, this pressure explains why do organizational systems self-organize.

2. Until recently, science was built on the assumption that a complex system can be decomposed into separate elements, and in order to analyze the system as a whole, it is necessary to study and describe the properties of each of its elements. This approach is called reductionism.

In contrast to reductionism, the key point of the complexity paradigm is that self-organizing dynamic systems demonstrate the action of the holistic principle, according to which “the complex is greater than the sum of its parts”.

This principle provides the emergence of a dynamic system, which can be defined as the process by which “patterns or structures of the global level arise from interactive processes at the local level. ... The combination of elements with each other gives something that did not exist before” [9, p. 1039]. This “something that

did not exist before” does not boil down to anything that existed before — this is precisely the case of the emergence of the quality of the emergent system.

The study of emergence is formed as an independent topic of scientific research in the 1990s, and now we can talk about a certain research tradition, primarily in Western organizational research and sociology [11]. Along with this, the concepts and tools of the theory of complex systems developed in the last decade are trying to give a deeper and more rigorous explanation of emergence through analysis of the spectrum of levels of a complex system and modeling of mechanisms of interaction between levels [14].

If the first two principles answer the question of why order arises in complex nonlinear dynamical systems, then the next two clarify how this new order arises.

3. This principle calls into question the task of establishing the exact localization of the causes of events or structural changes in the system. Events can occur sequentially at the same locus of the system, thereby generating a hypothesis about their causal dependence. However, such a hypothesis can often not be confirmed, since it is based on a false conclusion regarding the existence of a simple (linear) causal relationship between events. Often there is indeed a connection between events, but not by the type of mechanical determinism, but correlation, probabilist, when a certain event with a certain degree of probability gives rise to a consequence. Such a connection can be a valuable feature for a system if it increases the adaptation of the system to the environment of existence (that is, makes it more stable). In the case of an organization, a sign of its higher adaptation will be an increase in the effectiveness of achieving organizational goals. Therefore, it is often important that the design of changes takes into account the probabilistic characteristics of the connections between the elements of the organization in order to obtain a general probabilistic picture of the impact of changes on all relevant parts of the system.

Back in the 1980s it was found that the interactions between elements, as well as between an element and the whole in complex dynamic systems are not linear. That is, an increase in the impact force of an element, associated with another causal relationship does not cause a proportional response. It can be significantly, by orders of magnitude, larger or smaller. The most interesting cases for studying changes in organizational systems are those cases when insignificant impacts on an element, part of a system, which can be called perturbations of the micro level, lead to a disproportionately powerful response - changes - to the system as a whole, that is, at the macro level. Such empirically recorded effects allow us to state that in complex dynamic systems “there is no linear logic of the effect and the corresponding reaction. Moreover, the elements of the system are not independent of each other, and the interactions between them are nonlinear in nature” [10, p. 26].

4. The system theory of complexity has shown that complex self-developing systems have the property of non-linearity, which means that their reaction, scale and quality of changes can be disproportionate to the scale and magnitude of the driving forces. Nonlinearity means the presence of many qualitative leaps on the trajectory of the development of the system. In addition, non-linearity means that an increase in the driving forces of change will not necessarily lead to the desired result. Everything can be the other way around: great efforts can not only move away from the expected result, but also destroy the system. According to the witty remark of the American researcher R. Alvira, “140 degrees Fahrenheit is not twice as pleasant as comfortable 70 degrees, and eight tablets of aspirin do not cure headache eight times faster than one tablet” [6].

Non-linearity means that insignificant impacts on the amount of energy, substance, human resources involved can cause major organizational changes. However, such effects should not be carried out at any time and not at any locus of the system. There should be a suitable moment and a “weak link” should be identified, the instability of which will lead to large avalanche-like changes in the organization if exposed to it. This may be, for example, changes in the financial subsystem, the sales subsystem, the subsystem for receiving orders, the marketing subsystem, etc.

As for the temporal parameters of the organization’s “readiness” for changes, they can usually be defined as periods of increasing uncertainty, chaos, or as the transition of the organizational system to a state of bifurcation. This condition is often referred to as a "crisis."

The transition of an organization from one stage of development to another is carried out in a natural, “organic” way, when the possibilities for further growth within the framework of this stage are exhausted, characterized by a concrete and specific set of organizational characteristics — certain basic values, structure, leadership style, methods of coordination of work and adoption decisions, control, motivation, etc. Such a state of crisis or bifurcation is determined by the growth of chaos, in the sense of the impossibility of accurately, unequivocally predicting the trajectory of the further development of the organization, but only probabilistically evaluating the possibility of implementing one of the virtually existing trajectories or development options. However, which development option (attractor) will be chosen is determined by micro-level events, for example, preferences in choosing one or another alternative to a strategic decision made by the organization’s leadership under the influence of situational factors.

5. Studies in the field of self-organization of complex systems show that changes that do not threaten the system quality of the organization (that is, its ability to function stably and purposefully) do not encounter serious resistance. However, if there is a threat of overcoming such limits of change, the system will

resist change and return to the “normal” mode of operation, spending the accumulated resources for this. Nonlinear systemic dynamics is manifested in such a way that “when exposed below a certain level, transformational (that is, rebuilding the system) changes are unlikely, but when exposed above a certain limit, changes are inevitable and perturbation increase” [13, p. 358].

The practical significance for the organizational management of this idea lies in the requirement that in the hands of the management responsible for the changes, sufficient resources be concentrated in order to bring the system out of its former stable state and transfer it to a new one. If there are not enough resources, but a decision has been made to carry out a radical change, it is highly probable that they will be wasted on loosening the stability of the system or, using the term proposed by K. Levin, on “defrosting” it, and it will not be enough to carry out the actual change of forces and means [2].

In the process of change, an organization, as a complex dynamic system, can neither change in any arbitrary direction (arbitrary attempts to achieve this will lead to its destruction), nor stop at an arbitrary point on the path of change. It should move from one locus of stability to another. How to identify these loci? Exact recipes do not exist here, however, with a high degree of probability it can be argued that a new stable state will be associated with a change in the organizational structure and subsequent changes in organizational parameters that are traditionally related to organizational culture - basic values regarding the goals of the organization, attitude towards people, preferred style of leadership, decision-making practices, coordination of work, control, motivation and many others, which, to a large extent, are secondary, dependent on the organizational structure and its changes. A new logic of development appears, which outlines the unification of the structure, culture and strategy of organizational growth at a new stage in the development of the organization.

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在上海合作组织框架内形成单一超国家货币
**FORMATION OF A SINGLE SUPRANATIONAL CURRENCY
WITHIN THE FRAMEWORK OF THE SHANGHAI COOPERATION
ORGANIZATION**

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抽象。本文分析了在欧洲国家一体化协会框架内成功实现货币一体化的经验，以及它们在上海合作组织框架内加强一体化进程的适用性。研究方法基于系统方法，在此框架内，在金融一体化的理论和实践方面的系统化和综合的基础上，确定欧亚地区这些过程的问题和前景。研究的主题是在欧亚大陆境内建立超国家货币和建立货币联盟的可能性。本文讨论了货币一体化的形成和现代方向的特征，今天需要解决一些严重的经济问题，而这些问题只能由单一目标定向联合的国家来解决。本文的科学成果是证实了上海合作组织框架内深化金融一体化的主要措施，从长远来看，这可以为创建单一的超国家货币提供条件，从而加强美元的去美元化进程。世界经济。

关键词：经济去美元化，货币一体化，上海合作组织，俄罗斯，中国，货币政策，国家货币，欧亚大陆货币（EAC C），地缘经济稳定

Abstract. *This article analyzes the experience of successful monetary integration within the framework of integration associations of European countries and their applicability in the context of intensification of integration processes within the framework of the Shanghai Cooperation Organization. The research methodology is based on a systems approach, within the framework of which, on the basis of systematization and synthesis of theoretical and practical aspects of financial integration, the problems and prospects of these processes in the Eurasian region are determined. The subject of research is the possibility of creating a supranational currency and creating a monetary union in the territory of Eurasia. The article discusses the features of the formation and modern directions of monetary integration, the need for which today is due to a number of serious economic problems that can be solved only by countries united by a single target orientation. The scientific result of this article is the substantiation of the main measures of*

deepening financial integration within the framework of the Shanghai Cooperation Organization, which in the long term can provide the conditions for creating a single supranational currency to strengthen the de-dollarization processes of the world economy.

Keywords: *dedollarization of the economy, monetary integration, Shanghai Cooperation Organization, Russia, China, monetary policy, national currency, Eurasian continental currency (EACC), geo-economic stability*

Introduction

The relevance of this article is due to the fact that in recent decades, globalization has become the main trend in international relations and continues to deepen the relationship and relations between countries and regions of the world. The rapid development of modern technologies in the field of transport, communications, information and analytical tools contributes to the formation of a cohesive global community of states united by common development problems. The states united on a regional basis successfully carry out and implement today joint measures to ensure geoeconomic stability [5].

The achievement of these goals is facilitated by regional economic integration, which is a way to protect against competition in world markets, as well as an opportunity to ensure the sustainability and independence of development of each country. Despite the fairly large number of scientific publications on this topic, the possibility of deepening monetary integration in the territory of the Eurasian region with the prospect of creating a supranational currency is practically not considered. In this connection, it seems appropriate to analyze the prevailing conditions for the economic integration of the countries of the Shanghai Cooperation Organization (hereinafter - the SCO). And since the SCO is relatively young, its example can be used to observe the characteristic signs and problems of any growing organization, so it is important to conduct research on successful global practices of the flow and deepening of financial and monetary integration, for which you can refer to the experience of the European Union, where the solution of monetary and financial convergence and full integration took place according to the formula: - economic integration - monetary integration - financial integration.

The development of the SCO is due, above all, to global necessity, as well as to multilateral agreements and the general national interests of the SCO member states. There is no doubt that the SCO has enormous potential for each of the unique parameters of interaction between the partner countries, and the constant search for ways to solve emerging problems determines the direction of its further development. However, both politicians and researchers are now beginning to talk about the need to move to one of the most important stages of regional economic integration - the creation of a single supranational currency within the framework of all interacting states [2].

This position correlates with the goals and objectives of the SCO Strategy until 2025, which states that the most important development priorities are [10]:

- creation within the SCO framework of favorable conditions for sustainable growth of trade and investment cooperation, development and implementation of joint infrastructure projects, as well as strengthening business cooperation with the participation of the Business Council and the SCO Interbank Association;
- formation of common approaches of the SCO member states regarding the Silk Road Economic Belt initiative as one of the tools for creating favorable conditions for promoting economic cooperation in the SCO area;
- Member States will continue to strengthen mutually beneficial cooperation in the banking and financial sector, exchange best practices and information, make efforts to create favorable conditions for the development of the financial services market and attract investments, improve payment and settlement, and other financial and economic relations within the SCO.

Keynes spoke about the possibility of creating a supranational international currency, his assumptions about this included a desire to reduce savings in international currency - a decrease in the volume of gold flows between countries. To achieve this, according to Keynes, “interest should have been paid not only by the country’s debtors (for the presence of a deficit in the payment balance of a certain level), but also by the country’s creditors (for the presence of a surplus in the payment balance of a certain level). This would stimulate the countries to equalize the balance of payments on their own and to prevent significant gold flows”[4, 8]. Today, the leading position of the US dollar still remains, it will last long enough, but already now some researchers, for example, D. McDowell and D. Steinberg talk about the prospects of the Chinese yuan to act as an international currency to replace the dollar [1]. We believe that the yuan will not be able to push the dollar for a long time, but the possibilities of supranational currency within the framework of the SCO are higher.

Research methodology

The research methods used were systematization and generalization of theoretical approaches to economic and monetary integration, a comparative analysis of the conditions for the development of these processes in the European Union and in the SCO countries.

Scientific novelty

As the next stage in the development of the world monetary system, its gradual dedollarization with the transition to the multi-currency principle of international trade is assumed. As an alternative, it is proposed to create a single currency of the SCO, which is planned to be called the Eurasian Continental Currency (EUCC). It is assumed that the EUCC rate will be determined on the basis of the SCO total basket, and real gold should serve as a reserve asset. Accordingly, the EUCC issue should be provided with gold from a joint fund of SCO members. Questions remain about

the contributions of the SCO members to this fund, while their size should be determined taking into account the market value of gold. In the same way, it is supposed to regulate the emission of the EUCC and the amount of reserves of the SCO [8].

An important component of the SCO's activity is the development of close economic interaction. It is necessary to continue to eliminate barriers to trade, capital and labor flows, to deepen industrial and technological cooperation. Also within the framework of the SCO, large-scale efforts are underway to de-dollarize the economy, which are headed by China and Russia, starting in June 2014, the countries have been exchanging significant amounts in rubles and yuan, in addition, the gold reserves of the SCO countries are growing.

This signals the start of a new monetary system, which will eventually release its own currency, perhaps a basket of currencies, akin to the special drawing rights (SDR) of the International Monetary Fund (IMF), which can gradually replace the dollar as a reserve currency. Actually, this is already happening: a decade ago, 90% of world reserves were in dollar securities. Today, this figure has decreased to 60%, in addition, since 2003, reserves in other currencies in emerging markets have increased by 400% [11].

Discussion

The probability that the currency of the SCO will eventually shift the dollar as a world currency, that is, it will become the base and main reserve currency, is rather high, experts say. In addition, as soon as new money is created through a secure system of exchange and transactions, it is very likely that many countries that still do not dare to abandon the dollar (due to fear of sanctions) may join the new monetary system, thereby strengthening it [5].

In practice, Russia and China have been switching to settlements in national currencies for two or three years. In the border areas, trade is carried out in rubles and yuan for a long time, and the fact that the central banks of Russia and China signed an agreement on mutual swaps, in accordance with which Russian and Chinese business entities engaged in financial and economic operations with each other, have the ability to remove two transactions from their operations, that is, they do not need to convert the yuan into dollars and dollars into rubles or vice versa, as it was before [8].

However, one cannot but agree with experts who argue that the growing complexity of the global economy as a system, the presence of a conflict of interests imply that fundamental changes in the monetary system are not easy and they take some time [3, 6, 7]. And here it is important to understand what the most likely scenario for changing the global reserve system is, first of all, it will be an evolutionary process, not a revolutionary one. Secondly, at the beginning it should be a multicurrency system in which two or three types of currencies will act as reserves at the global level, and several regional currencies will perform the same function in the periphery of the global economy.

A free global market of currencies and a gradual strengthening of international financial rules are required. Only such a system will be able to ensure compliance with the requirements for liquidity of the global economy, which is multipolar, extremely complex, unstable (due to its innovativeness) and requires the free movement of capital and the rationalization of markets.

Speaking about monetary integration in the SCO, it is necessary to note a number of problems, in particular:

- the state of financial integration in the SCO countries in various market segments;
- problems in the way of forming a single financial services market;
- problems of integration of the securities market, insurance markets;
- problems of integrating national retail financial markets.

It should be understood that the goal of financial stability is closely linked to the achievement of price stability. If a systemic shock spreads within the financial system, monetary policy transfer mechanisms cannot function effectively. Typically, the expected effects of a systemic shock are excessive interest rate volatility and a surge in risk aversion. Excessive interest rate volatility blurs monetary policy signals, while increased risk aversion is accompanied by a reduction in liquidity and affects the real economy through a wide range of channels.

Although a fully integrated money market is the cornerstone of a regional monetary union, it does not require a single financial center or a single set of legal or regulatory provisions governing the activities of the financial sector. Indeed, persistent differences in financial systems, as well as the coexistence of several financial centers, should be seen as a benefit. They support competition, innovation, diversity of behavior and proximity - both geographically and culturally - thereby spreading the benefits of a monetary union beyond the achievement of price stability for the overall efficiency of financing the economy. However, systemic shocks arising from defaults in the financial sector can also occur in such a union. On the one hand, such shocks are likely to be better perceived due to deeper and more liquid financial markets; on the other hand, the full integration of the money market and the increase in cross-border flows can increase the side effects from one financial center to another. Against this background, a structure should be developed to monitor and manage risks of financial stability. Successful regional integration is the result of a long, gradual process that includes monetary policy, as well as other aspects of economic policy. The success of regional monetary integration depends on a number of key policy areas: improving resource allocation through the development of a competitive market economy, macroeconomic policies aimed at ensuring stability, and redistribution mechanisms to assist the less developed SCO member states.

To a certain extent, the SCO will have to cope with both increased complexity and increased uncertainty in the functioning of mechanisms through which key changes in interest rates are transferred to the corresponding macroeconomic variables, namely long-term rates, inflation and activity. This process is more complex, since these transmission channels may remain somewhat specific for a particular country after joining a monetary union (for example, due to the specific structural characteristics of the banking and financial sectors). There is more uncertainty, since the introduction of a new single currency may cause changes in the behavior of consumption or production (for example, with an impact on the stability of the demand for money), as well as changes in the process of determining the money supply to take into account the new environment (including the relatively reduced importance of exchange rate channel).

Wider use of the yuan will reduce the susceptibility of the traded sector of the SCO member countries to a sudden drop in the global supply of US dollars. The decline in liquidity in US dollars during the global financial crisis was indicated as one of the factors contributing to a significant reduction in exports during this time. This process can also reduce borrowing costs for enterprises by increasing access to offshore financing markets in this currency, reducing the risk of exchange rate changes.

Conclusion

Summarizing the above, we can conclude that, based on the presence of objective prerequisites for regional monetary and financial integration within the framework of the SCO, now the main task is to develop its new, viable model. At the same time, monetary and financial integration should become the locomotive of the integration development of the SCO, within which unique programs of monetary and financial integration should be developed, which will really meet the interests of all SCO members.

The problems of development of monetary and economic integration highlighted in the article seriously limit the results of these processes, therefore the measures proposed for deepening financial integration within the Shanghai Cooperation Organization, which in the long run can create conditions for creating a single supranational currency, will form the basis for enhancing the global economies de-dollarization process, and will contribute to the socio-economic recovery of member countries and the exit and on global markets, as well as the security, stability and sustainable development of the entire Eurasian region.

The article justifies the need to develop a framework for fiscal policy in order to minimize the risk of negative side effects from inappropriate fiscal policy in some participating countries; create appropriate forms of policy coordination, such as preliminary agreements on common rules and objectives, which serve

as a guide for national policies. The creation of a new monetary union requires that a number of technical problems be properly resolved, that various sources of systemic risk remain under control, and central banks maintain financial stability throughout the SCO.

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从一组更大功率中隔离所需对象子集的方法
**METHOD OF ISOLATING A DESIRED SUBSET
OF OBJECTS FROM A SET OF GREATER POWER**

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注解。提出了一种原始方法并成功地进行了测试,以从一组足够高的功率中选择所需的对象子集。使用该方法可以构建一套质量更好的回归模型*,用于评估和预测俄罗斯联邦各组成实体人口生活水平的指标(按统计显着性标准评估时 - $R^2_{corr} > 0.9$; $F_{kr} \gg 100$, 在大多数情况下, b系数的比率为 $b/\sigma_{bi} \gg 2$); *具有最佳预测属性; *使用公开的官方统计数据,同时检查包含数万个数字数据的初始信息数组中是否存在异常观测结果。

关键词: 人口生活水平, 俄罗斯联邦主体, 回归模型, 统计学意义

Annotation. *An original method was proposed and successfully tested to select the desired subset of objects from a set of sufficiently high power. The use of the method made it possible to construct a set of regression models * of better quality for evaluation and forecasting indicators of the standard of living of the population of the constituent entities of the Russian Federation (when evaluated by standard criteria of statistical significance - $R^2_{corr} > 0.9$; $F_{kr} \gg 100$, in most cases, the b-coefficients have a ratio of $b/\sigma_{bi} \gg 2$); * with the best predictive properties; * using open official statistical data and at the same time checking for the presence of anomalous observations in the array of initial information containing tens of thousands of numerical data.*

Keywords: *standard of living of the population, subjects of the Russian Federation, regression models, statistical significance*

Formulation of the problem. It is known that during the examination of the ordering of objects it is not recommended to offer an expert to rank more than 15-16 objects. With a larger number of objects, they should be divided into groups and ranked separately for each group of objects.

It is obvious that in this case a number of inconveniences arise. First, grouping can be done in countless ways. And, secondly, how to determine in which groups the desired (most important, necessary, useful, ...) objects were. At the

same time, when studying, for example, the standard of living of the population of the constituent entities of the Russian Federation or the standard of living of the population in any country in the world, it is necessary to analyze the effect on Indicator of interest to the researcher of hundreds and thousands of different factors. For example, in open statistical data generated by the UN and the World Bank, information on the values of several thousand socio-economic indicators characterizing the level of socio-economic development of countries of the world is presented, and in Rosstat collections - information on hundreds of indicators of the level of socio-economic development of constituent entities of the Russian Federation.

The question is, which indicator of this set has the most significant, determining influence on the standard of living of the population?

How to select the minimum composition of the group of indicators for the subsequent construction of forecast and/or optimization models?

Indeed, at present, there are no correct, well-founded methods and/or software-implemented algorithms in Russia and abroad, which allow for the rapid ranking of hundreds and thousands of objects by the criterion set by the researcher.

The article proposed and successfully tested the original method of allocating a limited subset of objects (factors, attributes, indicators) from the initial set of sufficiently large power, containing hundreds and thousands of objects.

1. Selection of a limited subset of the desired factor objects. Proposed step sequence:

Step 1. Using a table or a random number sensor from a database containing information about experts, possible participants of various examinations, qualified in the subject area under study examination participants are selected for the identification and subsequent sorting of the factor objects that have the most significant influence on the studied indicator.

Step 2. Selected experts are offered to take part in solving a specific task of interest to the organizers of the expert survey.

Step 3. Experts who agree to participate in the survey are assigned identifiers (also using a random number sensor). Suppose that there was 100 of those, who agreed to participate in the examination.

[**Note 1.** All three steps and a series of subsequent steps are performed automatically, i.e. not only the participants, but also the organizers of the expertise do not know who specifically participates in the polls, who and how substantiated their decision, how the groupings of the survey participants arise]

Step 4. Each participant in the expert survey is informed of the need to list the factor indicators that, according to the expert, have the main influence on the indicator being studied, and carry out rankings (ordering) of the listed factors by degree of importance.

[**Note 2.** The need to perform not only the selection of significant factors, but also their ranking, forces most experts to pay more attention to the choice of a subset of the required factors.]

Step 5. Each expert leave no more than 15-16 factors in the lists of selected and ordered factors.

As a result of step 5, a table of the type of table 1 will be formed.

[**Note 3.** Experts who have factors on the lists selected by no more than 10-15 percent of those participating in the examination - in table 1 these are factors X_2, X_j, X_{j+k} - are asked to explain the reasons for choosing these factors, and all experts are introduced with explanations, and are suggested to change their rankings if they so desire].

Table 1.
The results of the examination on the formation of a limited subset of significant factors

Expert	According to survey participants, it is these factors that have the main influence on the indicator under study								
	X_1	X_2	...	X_j	X_{j+1}	...	X_{j+k}	...	X_m
Z_1	1	1	...	1	1	...	0	...	1
Z_2	0	0	...	0	1	...	1	...	0
Z_3	1	1	...	1	1	...	0	...	1
...
Z_j	0	1	...	0	0	...	0	...	0
...
$\sum X_i$	92	11	...	3	97	...	2	...	95

Step 6. Processing of examination results – table 1.

Assume $Z = \{Z_i\}$, ($i=1, 2, \dots$) – a variety of experts who are assigned Z_i identifiers using a table (or sensor) of random numbers. Baseline information is presented as a table $\{x_{ij}\}$. At the same time

$$x_{ij} = \begin{cases} 1, & \text{if } i - \text{expert chose } j - \text{factor;} \\ 0, & \text{if } j - \text{factor is not listed in } i - \text{expert.} \end{cases}$$

Select the experts Z_i and Z_k ($i, k = 1, 2, \dots$) and introduce the following notation: $P_{ik}^{(11)}$ – number of simultaneously selected factors Z_i and Z_k , i.e. $P_{ik}^{(11)} = |Z_i \cap Z_k|$ – sets crossing capacity $Z_i = \{x_{ij}\}$ and $Z_k = \{x_{kj}\}$ ($j \in \overline{1, m}; x_{ij}, x_{kj} = 1$); $P_{ik}^{(10)}$ – the number of factors selected by the expert Z_i , but not listed in Z_k , i.e. $P_{ik}^{(10)} = |Z_i /$

Z_k - set power difference $Z_i = \{x_{ij}\}$ and $Z_k = \{x_{kj}\}$; $P_{ik}^{(01)}$ - number of factors, not listed in Z_i , but listed in Z_k , i.e. $P_{ik}^{(01)} = |Z_k / Z_i|$.

As a measure of misalignment between strings Z_i and Z_k select value $S_{ik} = P_{ik}^{(01)} / (P_{ik}^{(11)} + P_{ik}^{(10)})$, and to assess the degree of absorption by the expert Z_k of the list of factors of expert Z_i (the degree of inclusion, "occurrence" of the list of factors of the expert Z_i in Z_k) - value $h_{ik} = P_{ik}^{(11)} / (P_{ik}^{(11)} + P_{ik}^{(10)})$.

Build matrices $P = \{P_{ik}^{(01)}\}$, $S = \{S_{ik}\}$, $G = \{g_{ik}\}$, $H = \{h_{ik}\}$ ($i, k \in \overline{1, n}$), where $g_{ik} = P_{ik}^{(11)} / (P_{ik}^{(11)} + P_{ik}^{(10)} + P_{ik}^{(01)})$ - Jacquard measure of similarity.

Transform P, S, G and H into logical matrices of the absorption (inclusion) ratio for $\varepsilon_p, \varepsilon_s, \varepsilon_g, \varepsilon_h$ values.

$P_0 = \{P_{ik}^0\}$, $S_0 = \{S_{ik}^0\}$, $G_0 = \{g_{ik}^0\}$, $H_0 = \{h_{ik}^0\}$ ($i, k \in \overline{1, n}$), elements of which are defined as follows:

$$P_{ik}^0 = \begin{cases} 1, & \text{if } P_{ik}^{(01)} \leq \varepsilon_p \text{ and } i \neq k, \\ 0, & \text{if } P_{ik}^{(01)} > \varepsilon_p \text{ or } i = k; \end{cases} \quad S_{ik}^0 = \begin{cases} 1, & \text{if } S_{ik} \leq \varepsilon_s \text{ and } i \neq k, \\ 0, & \text{if } S_{ik} > \varepsilon_s \text{ or } i = k; \end{cases}$$

$$g_{ik}^0 = \begin{cases} 1, & \text{if } g_{ik} \geq \varepsilon_g \text{ and } i \neq k, \\ 0, & \text{if } g_{ik} < \varepsilon_g \text{ or } i = k; \end{cases} \quad h_{ik}^0 = \begin{cases} 1, & \text{if } h_{ik} \geq \varepsilon_h \text{ and } i \neq k, \\ 0, & \text{if } h_{ik} < \varepsilon_h \text{ or } i = k, \end{cases}$$

where ε - selected boundary values.

The difference in the composition of the factors selected by the participants of the expert survey can be clearly shown on the graphs constructed on the matrices G_0 and H_0 . The degree of interconnection of experts on the composition of their chosen factors can be assessed by analyzing the matrix $G = \{g_{ik}\}$.

To assess the informational weight of selected factors on the matrix P_0 find P_0^2 and amount of $(P_0 + P_0^2)$. Analysis of $(P_0 + P_0^2)$ matrix allows to determine which of the factors, according to the participants of the expert survey, has the greatest information weight (rank).

Advantages of using described method of selecting the desired subset of objects. The calculations performed provide an objective **comparative** assessment of the information weight of any factor. Using the considered algorithm and software products developed on its basis, it is possible to quickly carry out a comparative analysis of *practically unlimited number of factors and expert opinions*, correctly and with *minimal* effort, **classify* (group) experts according to the composition of the selected factor indicators; **the formation of a complete list of factors identified*

by all participants of the examination; **quantitative assessment* of the information weight of each factor.

Step 7. Based on data presented in Table 1, a list of 16 factors is formed for further study.

Step 8. The ranking of the formed list of 16 factors is performed using the method of step-by-step refinement of the ranking of objects [1-4]. The use of this method allows * to correctly *divide* (classify) experts into groups, * improve the *accuracy* of the examination *results* by having *feedback* during each round, * preserve the *benefits* of the Delphic procedure, * find the ordering of factors *coordinated* with the members of each group of participants in the expert survey, calculating *exact or approximate* Kemeny median.

2. The results of testing the described method. When conducting research related to the allocation of factors affecting the indicators of the standard of living of the population of the constituent entities of the Russian Federation, it turned out that the number of socio-economic indicators, which theoretically can affect the standard of living of the population, approaches one hundred. Moreover, it was found that several dozens of factors exert a statistically significant effect [5]. Therefore, it became necessary to *search* for the minimum set of the most significant, determining factors for building forecast and/or optimization models by selecting the desired subset of objects from a set of sufficiently great power. The implementation of this method made it possible to form an original, meaningful composition of independent variables and build models with good predictive properties [6–9]. And all models are built according to Rosstat until 2015 inclusive, since in the Rosstat collection for 2018, information on the socio-economic indicators of the development of the constituent entities of the Russian Federation for 2016 is not presented in full. Therefore, after Rosstat published a compendium with data for 2016 in 2019, we evaluated the forecast properties of previously constructed models in terms of the Average monthly nominal accrued wages of employees in the constituent entities of the Russian Federation, since For this indicator, the new compilation contains actual data for both 2016 and 2017 (see below the histograms of the forecast error by region of the Russian Federation in 2016 and 2017 and the forecast for 2018). The results of such an assessment of the quality of the constructed models turned out to be quite successful (see Figures 1 and 2).

Thus, the average error of our forecast according to the factual information on all 85 subjects of the Russian Federation presented in the new Rosstat collection is 2.1% for 2016 and only 1.65% (!) for 2017. But if we exclude even less than 5% of explicit emissions, which is quite acceptable (see, for example, [10]), then the errors will become even smaller. And in the near future, another method is to be tested by isolating a limited subset of objects (indicators of the socio-economic development of countries of the world) from the initial set of sufficiently great power (containing more than a thousand indicator objects) formed by the World Bank.

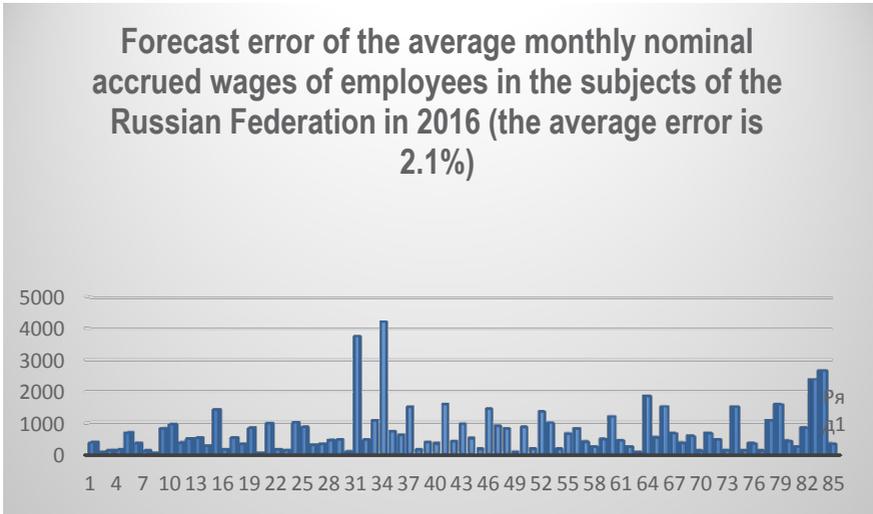


Fig. 1. – Forecast error of the average monthly nominal accrued wages of employees in the regions of the Russian Federation in 2016

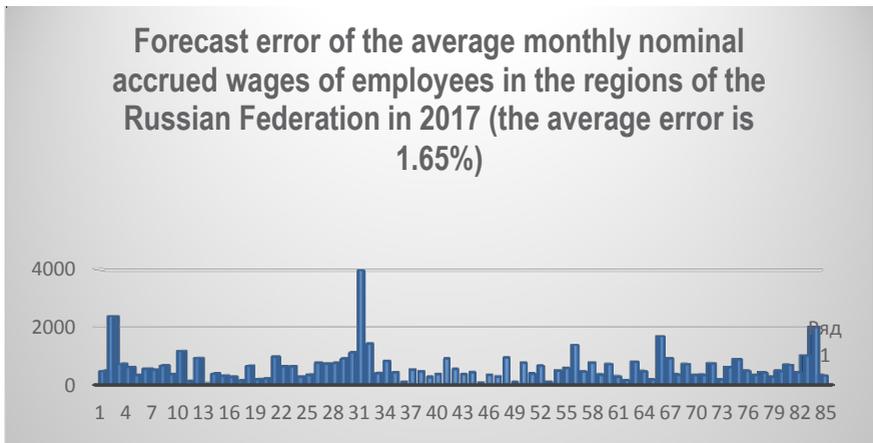


Fig. 2. - Forecast error of the average monthly nominal accrued wages of employees in the regions of the Russian Federation in 2017

At the same time, we tried to predict the value of the Average Monthly Nominal Accrued Wages of Employees in the Subjects of the Russian Federation in 2018 - see Figure 3 (Rosstat will publish actual data only in 2020)



Fig. 3. – The projected average monthly nominal wages of workers in the regions of the Russian Federation in 2018 (Rosstat will publish actual data in 2020)

Conclusions

1. An original method was proposed and successfully tested to select the desired subset of objects from a set of sufficiently great power of the original objects.

2. The results of testing the method on open official statistics confirmed the promising usefulness of application in various subject areas.

3. Using the method to assess and predict various indicators of the standard of living of the population of the constituent entities of the Russian Federation allowed us to construct a set of regression models * of better quality (when evaluated by standard criteria of statistical significance - $R^2_{corr} > 0,9$; $F_{kr} \gg 100$, in most cases, the b-coefficients of the ratio $b_i/\sigma_{bi} \gg 2$); * with better predictive properties; * using open official statistical data and at the same time checking for the presence of anomalous observations in the array of initial information containing tens of thousands of numerical data.

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长波动力学背景下的区域战略发展
**REGIONAL STRATEGIC DEVELOPMENT
IN THE CONTEXT OF LONG-WAVE DYNAMICS**

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抽象。本文的目的是在设计 and 实现相关程序的基础上，结合长波动力学的逻辑，研究俄罗斯区域战略发展的特点。应该强调的是，联邦或地区当局实现区域方案措施往往遇到诸如对属于主导技术系统的经济主体的创新或区域利益驱动行为的敌对关系等问题。为了尽量减少这种关系的潜在风险和威胁，应该发现潜在冲突的深层原因，包括联邦转移到地区的分配。在本文中，分析了联邦转移支付在区域合并预算收入中的份额与支出结构之间的反馈，并根据2001年北高加索联邦区的数据对这一反馈进行了实证确认。—2017。

关键词：区域战略规划，长波动态，预算分类，预算间转移，预算自给自足，排名。

Abstract. *The purpose of this paper is to study features of regional strategic development in Russia based on the designing and realizing relevant programs and taking into account the logic of the long-wave dynamics. It should be underlined that the realization of regional program measures by federal or regional authorities meets often with such problems as hostile relation to the innovative or regional interests-driven actions from the economic subjects belonging to the dominating technological system. To minimize the potential risks and threats of that kind of relation it should be discovered the deeper reasons of potential conflicts, including the allocation of federal transfer to regions. In this paper, the feedback between the share of federal transfers in the revenues of the regional consolidated budget and the structure of its expenditures is analyzed as well as this feedback is empirically confirmed on the basis of data on the North-Caucasian Federal District for 2001–2017.*

Keywords: *regional strategic programming, long-wave dynamics, budget classification, inter-budgetary transfers, budget self-sufficiency, ranking.*

JEL Classification Codes: B41, B52, E44, O33, O43, R58.

1. Introduction

The important priorities of the strategic planning of the spatial (regional) structure of the Russian economy have not been supported with sufficient progress in institutional and instrumental foundations of the state policy of regional development (Buchwald, 2019). The same is true in connection with the regional development taking into account the logic of the long-wave dynamics.

Regarding strategic regional development through a prism of long-wave dynamics (Perez, 2002) is to understand the “significance of the certain institutional context connected to the relevant technological one” (Yerznkyan, Magomedov, 2018, p. 84).

The long-wave dynamics logic connected with technological and institutional changes are “the basic keys to social and economic evolution and both exhibit the characteristics of path dependence” (North, 1990, p. 103). The latter is the reason why institutional frameworks “create both productive and unproductive opportunities for organizations”, including those who are involved in the process of regional strategic, especially large-scale programming, development.

At the same time, economic agents are not only constrained in alternatives by the existing institutions, but have imperfect knowledge with respect to accomplishing their objectives. Therefore, even “the objective happened to be consistent with increasing productivity, there is no guarantee that the goal would be realized, and unexpected consequences could lead to radically different results (a technological breakthrough that made property rights more insecure or increased the payoffs to terrorism, for example)” (North, 1990, p. 100). Speaking about organizations, we also emphasize that their importance in terms of rent generating and forming incentives that coordinate individual behavior is particularly emphasized in the paradigm of orders of limited access (North, Wallis, Weingast, 2009), which dominate *inter alia* in SCO countries.

2. Contexts of Strategic Development

To catch the essence of such orders and countries it should be take into account the contexts of their activity, especially cultural and institutional ones (Yerznkyan et al., 2017; Yerznkyan, Gassner, 2018). *Cultural context* is based on the societal, organizational, generational and other types of culture as *the collective programming of the mind that distinguishes the members of one group or category of people from others*. Societal cultures, for example, reside (often unconsciously) in values, in the sense of *broad tendencies to prefer certain states of affairs over others*, while organizational cultures reside rather (visibly and consciously) in practices: the way people perceive what goes on within their organizational environment (Hofstede, 2011, p. 3). To understand the cultural differences let us give just one example: “modern American culture gives high status to “what’s new?” whereas older cultures, such as the Japanese and Chinese, give high status to ideas and plans that have lasted hundreds of years” (Massie, 1987, p. 288). *Institutional context* is connected

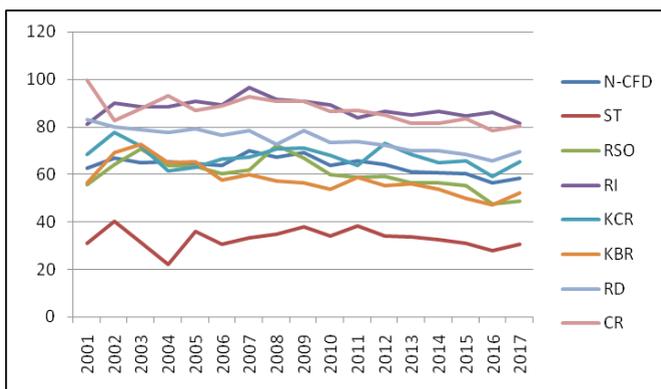
to activity of both formal and informal institutions. Culture and institutions may be well enough understood in the language of information transmission “from one generation to the next, via teaching and imitation, of knowledge, values, and other factors that influence behavior” (Boyd, Richerson, 1985, p. 2).

The ability of culture and institutions to mutually reinforce themselves is a good basis for their synthesis, especially in the strategizing and programming the regional problems passed through the prism of long-wave dynamics.

3. Program Structure Influence on Regional Performance

In the study of the problem of budgetary self-sufficiency as one of the most important indicators of the regional socio-economic development one can see that in a lot of Russian regions insufficient attention is paid to an analysis of the causes of the phenomenon of self-sufficiency. Let us now propose to assess the impact of program structure (Premchand, 1989, p.327) (i.e. the list of projected subprograms, program activities and their budgets) on the dynamics of the regional BSS.

The dynamics of the regional budgetary self-sufficiency for the subjects of North-Caucasian Federal District (NCFD) is presented in Figure 1.



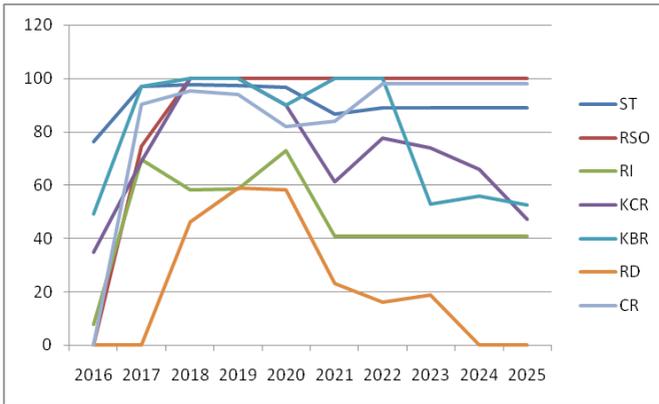
Source: (Yerznkyan, Magomedov, 2018, p. 87)

Figure 1 - Dynamics of the regional budgetary self-sufficiency in the subjects of North-Caucasian Federal District, Russian Federation, 2001–2017, %

Annual values of this indicator within the analyzed period remained practically unchanged or increased, which is poorly consistent with regular appeals from the federal center to the search for and activation of regional sources of development. Abbreviations for subjects of the NCFD are given below: 1) ST – Stavropol Territory; 2) RSO – Republic of Severnaya Osetiya-Alaniya; 3) RI – Republic of Ingushetia; 4) KCR – Karachay-Cherkess Republic; 5) KBR – Kabardino-Balkarian Republic; 6) RD – Republic of Dagestan; 7) CR – Chechen Republic.

As shows memorandum of the Development of the NCFD of the Russian Federation until 2025 (Decree..., 2016) for 2001–2017, program activities have following characteristics:

- ratio between the projected budget allocations to business sector and social sphere both for the whole program period and for certain years (Figure 2);
- ratio of individual areas (i.e. manufacturing sector, agro-industrial complex, transport and logistics, tourism and recreation) within the business sector in the program structure of NCFD subjects for the entire program period and by years (Table 1);
- stability of the flow of regional program expenditures distributed annually between individual areas of the business sector.



Source: (Yerznkyan, Magomedov, 2018, p. 88)

Figure 2 - Projected budget allocations to business sector (BS) in the program budgets of the NCFD subjects by years of 2001–2017, %

The analysis allows distinguish three groups of subjects of the NCFD: 1) Stavropol Territory and Republic of Severnaya Osetiya-Alaniya; 2) Karachay-Cherkess Republic, Kabardino-Balkarian Republic and Chechen Republic; 3) Republic of Ingushetia and Republic of Dagestan.

For the Stavropol Territory and the RNO-Alania, belonging to the first group, the share of productive activity in their total program budgets is 94.1% and 98.4%, respectively. Moreover, in the Stavropol Territory at the main stage of the Program (2016–2020), more than 90% of these funds are planned to be spent on activities to create an innovative medical cluster, and at the second stage (2021–2025) – an average of about 62% of the annual regional program budget is supposed to be invested in manufacturing sector. Program structure of RNO-Alania during 2016–2025 is characterized by an even distribution of funds invested in the real sector of the economy between the agro-industrial, industrial, tourist-recreational and transport-logistic complexes in the proportion of 5: 3: 1: 1.

The second group is characterized by a slight lag behind the leader in terms of the share of productive activity in the aggregate regional program budget. For the entire program period of 2016-2025 its values are 74.1%, 83.4% and 90.7% for the KCR, the CBD and the CR, respectively. However, the high values of this indicator in the period 2016-2020 are the result of the influence of subprogram No. 8 on the development of the tourism cluster in the territories of these subjects of NCFD. This circumstance was the decisive factor for the formation of the second group. At the final, third, stage of the State Program in this group, there is a shift in priorities in favor of the manufacturing sector, which occupy at least 60% in the structure of productive activities in some years. Thus, the main problem of the program structures of the participants in this group is the shift in priorities of the federal center from the tourism and recreation (2016-2020) to manufacturing sector (2021-2025).

The distinctive feature of the third group is the approximately equally low share of program expenditures for the manufacturing industry in total spending on business sector within the entire program period (36.6% and 43.5% for Republic of Ingushetia and Republic of Dagestan, correspondingly), burdened by a comparatively low share of business sector activities in their total program budgets (40.2% and 16.9% for Republic of Ingushetia and Republic of Dagestan, correspondingly). Moreover, the program structure of Dagestan is aggravated by the absence of business sector activities on its territory within the first two and four last years of the State program.

These results lead to the conclusion that increasing the level of BSS is practically unattainable for the members of the third group. Obviously, the prevalence of government spending on social sphere in the program budget (e.g. construction of schools, hospitals, social protection institutions) unfolds a spiral of public expenditures (e.g. salaries for social workers, payment of utility services and operating expenses), thus leading to a shrinkage of the regional business sector and its reduced ability to self-service the increased social sphere.

Taking into account the specifics of this region (e.g. stable high levels of birth rate and of life expectancy, high level of shadow economy, employment structure), a high proportion of social activities in the program structures of the third group hardly contributes to the growth of BSS of the relevant NCFD subjects. The analytical hypothesis is that the regional BSS in the medium- and long-term perspective depends on the ratio of measures of productive and non-productive nature in the regional development program.

Undoubtedly, from the perspective of public administration, an important positive consequence of public investment in social sphere is a well-predicted tax effect, as well as a predictable growth in the main macroeconomic indicators assigned as program targets, since social sphere is fairly transparent. The main disadvantage of the significant predominance of social development activities is the constant and growing need for FBTs.

Table 1
Distribution of the Program's projected expenditures within business sectors in the NCFD subjects, %

	indicator/ year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016-2025
1.	ST	100										
	IMC	100	94,43	95,06	91,73	91,97	0,00	0,00	0,00	0,00	0,00	70,48
	MSA	0,00	3,34	3,17	4,83	5,31	60,00	60,98	60,98	63,41	63,41	18,25
	AIC	0,00	2,23	1,78	3,44	2,73	40,00	39,02	39,02	36,59	36,59	11,27
2.	RSO	100										
	AIC	0,00	49,04	50,00	50,00	50,00	50,00	50,00	50,00	50,00	50,00	49,97
	MSA	0,00	31,34	30,00	30,00	30,00	30,00	30,00	30,00	30,00	30,00	30,05
	TLC	0,00	9,81	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	9,99
	TRC	0,00	9,81	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	9,99
3.	RI	100										
	AIC	0,00	48,74	54,03	53,36	59,75	50,89	50,89	50,89	50,89	50,89	51,87
	MSA	100	51,26	45,97	46,64	40,25	32,97	32,97	32,97	32,97	32,97	36,58
	TLC	0,00	0,00	0,00	0,00	0,00	16,14	16,14	16,14	16,14	16,14	11,55
4.	KCR	100										
	TRC	100	0,00	0,00	73,49	73,05	28,49	25,22	32,82	37,79	23,00	46,94
	MSA	0,00	79,66	88,93	24,46	22,71	62,95	68,04	66,66	62,21	77,00	49,05
	AIC	0,00	20,34	11,07	2,06	4,25	8,56	6,74	0,52	0,00	0,00	4,01
5.	KBR	100										
	TRC	100	78,86	82,99	82,96	87,66	7,80	12,48	11,31	10,52	8,22	52,58
	MSA+AIC	0,00	21,14	17,01	17,04	12,34	92,20	87,52	88,69	89,48	91,78	47,42
6.	RD	100										
	TLC	0,00	0,00	23,83	15,93	16,82	54,16	100	100	0,00	0,00	51,39
	MSA	0,00	0,00	67,03	78,77	77,93	35,40	0,00	0,00	0,00	0,00	43,51
	AIC	0,00	0,00	9,14	5,30	5,25	10,44	0,00	0,00	0,00	0,00	5,09
7.	CR	100										
	TRC	0,00	80,87	81,00	78,15	80,42	0,00	0,00	0,00	0,00	0,00	38,72
	MSA	0,00	8,62	9,28	9,08	4,69	72,69	83,24	77,17	63,22	53,49	39,87
	AIC	0,00	10,51	9,72	12,78	14,89	27,31	16,76	22,83	36,78	46,51	21,41

Abbreviations: IMC – innovation medical cluster; MSA – manufacturing sector activities; AIC agro-industrial complex; TLC – transport and logistics complex; TRC – tourist and recreation complex.

Source: (Yerzkyan, Magomedov, 2018, p. 89)

Thus, the program structure of the Republic of Dagestan and the Republic of Ingushetia, with the predominance of social activities, plays the role of a kind of "trap for subsidization", making it impossible to solve the problem of reaching the stable trajectories of social and economic development without permanent budgetary injections from the federal center.

The latter gives rise to the hypothesis that there is a negative feedback between the share of expenditures on business program activities in the total expenditures and the share of FBTs in the total revenues both of the regional consolidated bud-

et. As a tool for substantiating this hypothesis is the correlation analysis of the results of the ranking of the NCFD subjects on the share of FBTs in the revenues of their consolidated budgets (variable Y), on the one hand, and the share of business program activities in the expenditures of their consolidated budgets, namely, subsidies and capital construction (variable X), on the other.

In order to determine the value of regional budgetary expenditures for business program activities the following subsections of the section "National Economy" of the Russian classification of budget expenditures were selected: (1) general economic issues; (2) fuel and energy complex; (3) agriculture and fisheries; (4) transport; (5) road funds; (6) other issues of national economy.

Then in these subsections the following types of expenditures of consolidated budgets for each subject of the NCFD for the period 2001-2017 were summarized: budget investments in capital Calculations showed (Table 2) the negative feedback between the variables X and Y, which varies from year to year within 2001-2017. The central point explaining the result obtained is the positive, with few exceptions, feedback between the share of taxes on businesses (i.e. income tax in business sector, value-added tax, employment tax) in the regional budget revenues and the share of budget spending on the business sector, also presented in Table 1. Let us notice that BR is budget revenues; BS – business sector; BE –budget expenditures; TEA – taxes on economic activity. Calculations of the coefficients of rank correlation by years of the period under consideration include the construction of regional ratings by the values of the selected indicators X and Y. In the future work it is supposed to complicate the task of ranking regions when these indicators are multidimensional quantities (Grebennikov, Belenky,, 2012).

4. Conclusion

For a correct description of the strategic regional *among others* development, it should be taken into account the logic of long-wave dynamics. However, as a rule, in orders with limited access and corresponding to them countries, such as the SCO countries, its consideration is often not even posed as a problem. One of the reasons is in their specificity, which includes, among other things, the strong rent-oriented behavior of many stakeholders, both at the federal and regional levels, as in the case of Russia.

Strategic regional development, especially its programming, has caused many problems, such as: (i) hostile relation to the innovative or regional interests-driven actions from the economic subjects belonging to the ruling technological system; (ii) ignoring the logic of long-waved development and institutional specificity of regions under consideration; (iii) the absence of interest to discover the deeper reasons of potential conflicts, including the allocation of federal transfers to regions, in order to minimize the potential risks and threats of that kind of relation.

Table 2*Two results of correlation analysis (Spearman indices of cograduation)*

Year	correlation between	
	share of BS activities in BE and share of FBTs in BR	share of TEA in BR and share of BS activities in BE
2001	-0,643	0,179
2002	-0,429	0,214
2003	-0,393	0,536
2004	-0,286	0,107
2005	-0,357	0,071
2006	-0,179	-0,321
2007	-0,036	-0,286
2008	-0,214	0,393
2009	-0,143	-0,107
2010	-0,429	-0,036
2011	-0,071	0,357
2012	-0,286	-0,107
2013	-0,143	0,286
2014	-0,036	0,143
2015	-0,179	0,107
2016	-0,286	0,429
2017	-0,357	0,179

Source: (Yerznkyan, Magomedov, 2018, p. 92)

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在刑法发展动态背景下的反对司法罪的制度
**THE SYSTEM OF CRIMES AGAINST JUSTICE IN THE CONTEXT
OF THE DYNAMICS OF THE DEVELOPMENT OF CRIMINAL LAW**

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注解。将反对司法罪系统化的问题是刑法学中最值得商榷的问题。这不仅与确定刑法保护对象的复杂性，初步调查机构和法院的正常活动的犯罪侵犯的多样性和多样性有关，而且与该机构的发展动态有关。作者分析了现有的语料库分类理论方法。俄罗斯联邦“刑法”第31条提出了自己对刑事责任区分理由的看法。提出了一种反对司法罪的制度，该制度建立在行为人正在侵犯的社会关系的内在内容的基础上。

关键词：犯罪，司法，制度，刑事责任，初步调查，法院。

Annotation. *The problem of systematization of crimes against justice is among the most debatable in the science of criminal law. This is connected not only with the complexity of determining the object of criminal law protection, the multiplicity and variability of criminal encroachments on the normal activities of the bodies of preliminary investigation and the court, but also the dynamics of the development of this institution. The author analyzes the existing theoretical approaches to the classification of corpus delicti provided by ch. 31 of the Criminal Code of the Russian Federation, offering its own vision of the grounds for the differentiation of criminal responsibility. A system of crimes against justice is proposed, which is built on the basis of the internal content of those social relations that the perpetrator is encroaching upon.*

Keywords: *crime, justice, system, criminal liability, preliminary investigation, court.*

The encroachment on the activities of law enforcement and judicial authorities, classified by the legislator among the criminal ones, is governed by Ch. 31 of the Criminal Code. The number of changes and additions made to the criminal law in recent years indicates the close attention of the state to the rather acute problem of criminal encroachment on the activities of the criminal justice bodies in investigating and resolving the merits of criminal cases. Here are just a few ex-

amples. So, Art. 298 of the Criminal Code (defamation of a bailiff) was excluded, but somewhat later, Art. 298.1 of the Criminal Code of the Russian Federation, expanding the circle of persons against whom criminal acts may be committed - slander against a judge, juror, prosecutor, investigator, person conducting an inquiry, a bailiff was put into action. From 2011 to 2018, the following acts were criminalized: evasion of administrative supervision or repeated failure to comply with the restrictions or limitations established by the court in accordance with federal law (Article 314.1 of the Criminal Code of the Russian Federation); illegal initiation of criminal proceedings (part 3 of article 299 of the criminal code of the Russian Federation); falsification of evidence in an administrative case by a person participating in the case or his representative, as well as falsification of evidence in an administrative offense case by a participant in an administrative offense case or his representative, as well as falsification of evidence by an official authorized to hear administrative offenses, or an official authorized to draw up protocols on administrative offenses (part 1 of article 303 of the Criminal Code of the Russian Federation); malicious non-execution of a court judgment, decision of a court or other judicial act that has entered into legal force, as well as obstruction of their execution by a person subjected to administrative punishment for the act provided for by part 4 of art. 17.15 of the Code of Administrative Offenses of the Russian Federation, committed in respect of the same judicial act (part 1 of article 315 of the Criminal Code of the Russian Federation). The sanctions of the articles included in Ch. 31 of the Criminal Code of the Russian Federation, was frequently corrected in accordance with the general changes made to the system of punishments, as well as to toughening the level of criminal repression for corruption crimes. We believe that even an incomplete list of changes and additions made in Ch. 31 of the Criminal Code, convincingly illustrates the need for further theoretical understanding of the foundations of the institution of criminal responsibility for crimes against justice, as well as the need to systematize them.

It should be noted that in the science of criminal law, there is an active search for a universal criterion for systematization of *corpus delicti*, the object of which is committed in the process of administering public relations, arising in the administration of justice, mainly in criminal cases. An analysis of the bibliography of the issue allowed to conclude that the classification based on the characteristics of the subject - an official of a law enforcement or judicial body with authority in the judicial process, as well as another participant in the process who does not fulfill his law duties is the most in demand [1, p.412]. Based on this criterion, the totality of offenses against justice is divided, respectively, into two groups: acts committed by officials (Articles 299-303, 304, 311 of the Criminal Code of the Russian Federation), as well as acts committed by citizens involved in the orbit of legal proceedings (Articles 294-297, 298.1, 304, 306, 308, 310, 312, 316 of the Criminal

Code of the Russian Federation). At the same time V.N. Kudryavtsev clarifies that the second of these groups, due to the significant number and different functional roles of the persons involved in the process, can in turn be subdivided into crimes committed by persons facilitating legal proceedings (for example, in the criminal process this category includes other participants in the process: witness, expert, specialist, translator, observer), as well as crimes committed by other person [2, p.196]. It should be noted that the mentioned classification criterion in some special studies is detailed while maintaining the general approach to differentiating criminal responsibility: the mechanism for committing a crime is taken as a basis: it is either done “from the inside”, i.e. by a person who is in the system of law enforcement and judicial authorities, or “from the outside” - by another person who is not assigned the function of criminal prosecution, settling the case on the merits, as well as executing a court decision [3, p.20-21].

No less relevant is the classification of crimes against justice by the object of infringement. The above criterion is evaluated in the science of criminal law as the most preferable, since it corresponds to the model of construction of the Special Part of the Criminal Code of the Russian Federation [4, p.125-128]. The public relations that ensure the normal functioning of certain law enforcement agencies and the court are referred to as the direct object of abuse, which makes it possible to single out the following groups of crimes: crimes that violate relations that ensure the normal administration of justice by the court (part 1 of article 294, part 1 of article 296 Article 297, Part 1 of Article 298.1, Part 1 of Article 303, Article 305 of the Criminal Code); crimes that violate relations, ensuring the normal functioning of the prosecution authorities and the preliminary investigation of the prosecution function (part 2 of article 294, article 299 - 300, part 1 of article 301, article 302, 304, 310 of the Criminal Code); crimes that encroach upon relationships that ensure the normal functioning of the bodies responsible for the execution of a judicial act (art. 312-315 of the Criminal Code of the Russian Federation); on relations that ensure the normal activities of all bodies for the administration of justice (common crimes against justice: article 295, part 2 of article 296, article 311 of the Criminal Code); or judicial bodies on the administration of justice, as well as prosecution bodies, preliminary investigations on the implementation of criminal prosecution (part 2 of article 301, part 2 of article 303, article 306 - 309, 316 of the Criminal Code); or the prosecution authorities, the preliminary investigation of the implementation of the criminal prosecution, as well as the bodies executing judicial acts (part 2 of article 298.1 of the Criminal Code) [5, p. 708].

The relationship of the object and the subject of the crime drew the attention of I.V. Dvoryankov, pointing out that any classification of crimes by the direct object of encroachment inevitably affects its subjects, therefore, distinguishing the encroachment of those affecting the activities of the judiciary and those who

infringe on the activities of other persons assisting in the administration of justice as a basis, it should be considered that they are committed both by officials of the bodies of criminal justice, and by other citizens who are involved and not involved in the orbit of legal proceedings [6, p.18-23].

Of independent theoretical value, in our opinion, is the classification, which is based on the search for common signs of the objective side of the offenses provided for in Ch. 31 of the Criminal Code of the Russian Federation, according to which they are proposed to be divided into: crimes that infringe on the independence of the judiciary, its authority and the safe activities of judges and other persons assisting in the administration of justice (Art. 294 - 298.1 of the Criminal Code); crimes against justice committed by judges and other officials of the preliminary investigation bodies and by the parties in a civil (arbitration) case (Art. 299-305 of the Criminal Code); crimes that violate the procedure established by the Constitution of the Russian Federation and the procedural law for obtaining, using and preserving evidentiary information (Article 306 - 310 of the Criminal Code); 4) crimes that infringe on the procedure established by law for the execution of sentences that have entered into legal force, court decisions and other judicial acts (Art. 311-315 of the Criminal Code) [7, p.56-57].

We believe that due to the heterogeneity of socially dangerous encroachments, combined in ch. 31 of the Criminal Code of the Russian Federation, it is quite difficult to propose single-level classification on a single basis. In this case we should talk exactly about the system of crimes, which structurally integrates several subsystems in itself, i.e. built on the basis of the internal content of those social relations that infringe the perpetrator. At the first stage, two main groups of encroachments can be distinguished: encroachment on the activities of participants in legal proceedings (Article 294, 299-310, 312-316 of the Criminal Code of the Russian Federation); encroachment on the personal benefits of participants in legal proceedings (life, health, honor, dignity), as well as their relatives, aimed at obstructing legal activity or out of revenge for it (arts. 295-298.1, 311 of the Criminal Code of the Russian Federation). At the second stage of systematization, the activity that is the object of encroachment in the first classification group can be determined, depending on its content, into several subgroups: encroachment on activities related to making procedural decisions (arts. 294, 299,300, 301, 305 of the Criminal Code of the Russian Federation); encroachment on activities related to obtaining objective information about a crime, as well as obtaining evidence (arts. 302-304, 306-309 of the Criminal Code of the Russian Federation); encroachment on activities constituting the content of criminal prosecution in pre-trial proceedings (Arts. 310, 316 of the Criminal Code of the Russian Federation); encroachment on the execution of court decisions (Art. 301 Part 2 - regarding detention; Arts. 312, 313, 314 and 315 of the Criminal Code of the Russian Federation). In the second clas-

sification group, several subgroups can also be distinguished: encroachment on the life, health, and safety of participants in legal proceedings and their relatives (arts. 295-296, 311 of the Criminal Code of the Russian Federation); encroachment on the honor, dignity and business reputation of the participants in the process (Articles 297, 298.1 of the Criminal Code of the Russian Federation).

Thus, taking into account the specific object of the criminal law protection of a crime in the sphere of legal proceedings, it can be defined as intentional acts prohibited by criminal law that encroach upon public relations arising from the administration of justice, as well as other law enforcement activities in the course of legal proceedings. And, accordingly, their systematization should be multi-level and depend on the internal content of social relations protected by criminal law.

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刑事和社会理由使少年刑事诉讼的程序形式复杂化

**CRIMINAL AND SOCIAL GROUNDS FOR COMPLICATING
THE PROCEDURAL FORM OF JUVENILE CRIMINAL PROCEEDINGS**

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抽象。对未成年人的刑事诉讼是使刑事诉讼程序复杂化的传统方式，但在俄罗斯融入国际法律领域，实施公平司法标准和建立最高程度保护的一般趋势的背景下。所涉及的未成年人的基本权利和自由，刑事司法轨道正在更新。在没有为未成年人设立专门刑事法院的情况下，预先确定立法者特殊待遇的原因和条件是本出版物的直接主题。

关键词：少年，刑事案件，权利和自由，司法，刑事诉讼形式

Abstract. *Criminal proceedings against minors are a traditional way of complicating the procedure of criminal proceedings, but in the context of the general trend towards Russia's integration into the international legal field, the implementation of fair justice standards and the creation of a maximum level of protection of the fundamental rights and freedoms of minors involved in, the criminal justice orbit are being updated. The reasons and conditions that predetermine the need for special treatment of the legislator in the absence of specialized criminal courts for minors are the direct subject of this publication.*

Keywords: *juvenile, criminal case, rights and freedoms, justice, criminal-procedural form*

Differentiation of the procedural order of criminal proceedings on the crimes of minors is due to the peculiarities of the identity of the subject to be held criminally liable. Recently, the concept of “child-friendly justice” [1] was introduced into the legal lexicon, which is understood as a judicial system, including criminal justice, which guarantees the protection and effective enforcement of rights of the child, taking into account age, maturity and understanding of the circumstances of the case. A form of realization of the concept of humane justice and the individualization of the criminal responsibility of minors, in our opinion, is a separate model of evidence, as well as special rules of legal proceedings in this category of criminal cases. A separate course for proceedings of criminal cases in respect of minors is provided for in Ch.50 of the Code of Criminal Procedure of the Russian Federation. In particular, in relation to the subject of evidence, which expresses the

essence and content of all cognitive activity in this category of criminal cases, the provisions of Art. 73 of the Code of Criminal Procedure, are supplemented by the requirements of Art. 421 of the Code of Criminal Procedure in terms of the obligation to establish: 1) age of a minor; 2) living conditions and upbringing of a minor, level of mental development and other features of his personality; 3) influences of older persons on a minor. In addition, in accordance with Par. 44 of Resolution of the Plenum of the Supreme Court of the Russian Federation of 01.02.2011. №1 “On Judicial Practice of Applying Legislation Regulating Peculiarities of Criminal Responsibility and Punishment of Minors” [2] (hereinafter – Resolution №1), in order to increase the educational impact of court proceedings, it is necessary to establish the causes and conditions of each criminal case against a minor, that contributed to the commission of a crime.

Such a technical and legal separation of the rules on the circumstances to be proven in criminal cases involving minors, as well as other features of criminal proceedings, are provided for in Ch. 50 of the Code of Criminal Procedure, in our opinion, have two key reasons: 1) criminal-legal; 2) social. The first characterizes minors as subjects of criminal responsibility, and the second - as a certain social group that has specific causes of crime, due to age characteristics. Anticipating the analysis of each of the grounds for differentiating criminal proceedings that we identified, we would like to note that the social-right status of a minor is not defined at the constitutional level, despite the presence of an extensive international legal framework. Moreover, the subject features of minors are not highlighted and not generalized by the general theory of law. The legislation of individual industries specifies the legal status of a minor, but only as a participant in labor, family or civil law relations. As A.I. Rarog rightly points out, in the absence of a unified concept allowing to consider a minor as an independent subject of legal relations, industry solutions to problems related to the legal liability of minors do not form a single system [3, p. 187]. This affects the criminal law and criminal procedure concepts of the responsibility of minors and the order of proceedings in the relevant category of criminal cases.

At the same time, the legislator has structurally separated the rules governing the specifics of the criminal responsibility of minors, combining them into ch. 14 of the Criminal Code of the Russian Federation. According to most experts in the field of criminal law, such structuring is due to a number of factors that, in our opinion, fully apply to the differentiation of criminal proceedings in cases involving minors. These factors traditionally include: 1) the importance that society places on juvenile delinquency; 2) the specifics of it; 3) socio-psychological characteristics of persons aged 14 to 18 years; 4) specifics of criminal law measures applied to minors; 5) need to accurately establish the legal regulation of deviations from the general rules of criminal responsibility [4, p. 217].

In our opinion, the criminal law basis for the differentiation of the procedure for the production of criminal cases involving minors characterizes the peculiarities of criminal responsibility provided for in Art. 87 of the Criminal Code of the Russian Federation. These include two provisions: 1) from the point of view of criminal law, minors are persons who, by the time the crime was committed, turned 14 but were under 18 years old; 2) as an alternative to criminal punishment, coercive measures of educational influence can be applied to minors, including placing it in a closed-type educational institution. In the Russian criminal law doctrine, the opinion was firmly established that the state policy in this case is based on the principles of humanism and condescension towards the juvenile offender's personality, which is not socially and legally developed. Indulgence in matters of criminal liability, in accordance with the provisions of Ch. 14 of the Criminal Code of the Russian Federation, can be expressed in: 1) reducing the time and amount of ordinary punishment or liberalizing their application; 2) liberalizing the general rules of sentencing; 3) expanding the grounds for exemption from criminal liability and punishment; 4) liberalization of the procedures for repealing crimes and convictions. In addition, the provisions of P. 3 of Art. 20 of the Criminal Code of the Russian Federation should also be considered, according to which, if a minor has reached the age from which he can be held criminally liable, but has a lag in mental development unrelated to mental disorder, limiting his ability to realize the actual nature and social danger of his actions (inaction) or control it, then he should not be subjected to criminal liability. Thus, substantive law formulates the special status of a minor as a subject of criminal responsibility, which predetermines the content of the subject of evidence in the relevant category of criminal cases.

The need to obtain the personal characteristics of the minor, taking into account the age characteristics, as well as establishing the causes and conditions that contributed to the crime, in our opinion, is a consequence of the special social status of the minor. In this regard, we consider it appropriate to analyze the need to prove the additional circumstances of the crime committed by an adolescent in the context of the connection between the contradictions of adolescence and their deviant behavior. According to the majority of specialists in the field of psychology and pedagogy, the age group of people from 14 to 18 years old is characterized by an aggravated reaction to social attitudes and needs, enters into conflict situations with the outside world [5, p.12]. In this regard, a distinctive feature of juvenile delinquency is a high latency, faster and more acute response to negative social changes. The reasons for the commission of crimes by minors are due to their personal characteristics, and are taken into account by the legislator when designing a model of proceedings for the relevant category of criminal cases. Consider some of them.

First, adolescence is characterized by the presence of a hidden or overt protest against adult control and an increasing desire for independence. The struggle of a minor for personal freedom creates costs and risks in the form of actions, which are often destructive in relation to adults, society, the adolescent group, and often to themselves. In addition, in today's conditions rather high demands are made on a minor. The orientation of society towards a quick result, the cult of material values, competition creates conditions for the development of a teenager in which he “matures” much earlier, his material needs exceed the available opportunities, which entails attempts at illegal earnings: for example, hacking, fraud, deception. As M. Mid rightly notes, the features of the education system, the lack of infrastructure for the gradual integration of the adolescent into the socio-economic relations prevent them from smoothly taking the adult position [6, p.21]. The opposite side of this process is the lag in mental development from the physical age of a minor, which psychologists regard as a form of protest against the social conditions of growing up, not excluding physiological factors.

Secondly, often in adolescence conflicts arise in the sphere of interpersonal relations, which is the cause of their aggressive behavior. It is impossible not to take into account the fact of sexual maturation, which causes mental breakdowns, acute emotional reactions in a situation of loss of close relationships with a person of opposite sex. In order to attract attention, adolescents are able to perform extravagant acts, including illegal ones, which cannot be ignored when examining his personality as part of the process of evidence.

Thirdly, the main element of a teenager's society is the family, in which he learns one or another model of behavior in various situations, including conflict situations, which later forms his behavior in “external” relationships. In addition, criminologists, as the main cause of juvenile delinquency, identify negative processes in the family, when a close person does not help a teenager in a crisis situation, does not control his behavior, does not care about him. Often, in such cases, the minor finds an equivalent of this society in another place, not excluding marginal groups where he is involved in the commission of a crime. Family problems are closely related to the problems of the education of minors, which plays a decisive role in determining the educational and pedagogical measures designed to influence the younger generation.

All the above-mentioned features of adolescence predetermine the need for each criminal case against a minor to reliably establish the characteristics of his physical and mental health, character, bad habits, circumstances that have traumatized the psyche of a minor, the degree of compliance to influences, the degree of assimilation of the criminal environment, conflict inclination, etc.

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第三节英语课上的世界人民运动会
**GAMES OF PEOPLE OF THE WORLD AT ENGLISH LESSONS
IN THE THIRD CLASS**

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A game - is a complex sociocultural phenomenon, an integral part of a human life that accompanies it from birth to the last days, noted by many researchers in the field of various sciences about man. (A. A. Anikeev). [1]

According to psychologists (A.A. Leontyev), the motivation created by the game, that is, the game motivation, must be represented in the educational process along with the communicative, cognitive and aesthetic. All this taken together constitutes the motivation for learning. [4]

The concept of "game" is considered in the scientific works of such domestic and foreign teachers as G.K. Selevko, N.D. Galskova, E.A. Pasova, E.A. Maslyko, A.A. Leontiev and J. Huizinga.

The game has always been the subject of close attention of teachers and psychologists. In pedagogy, game theory was actively considered by S.A. Shmakov et al. [3]

In foreign psychology and pedagogy, the features of the game were revealed by E. Bern and J. Huizinga. [7] Their works substantiated various concepts of understanding the essence of the game as an activity, its role in the ontogenesis of the personality, in the processes of socialization - the assimilation and use of social experience by people. [2]

Educational games, according to G.K. Selevko, perform 3 main functions [5]:

- Instrumental: the formation of certain skills;
- Gnostic: the formation of knowledge and the development of students' thinking;
- Socio-psychological: the development of communication skills.

Mf Stronin, the author of a number of books devoted to educational games that are used in teaching foreign languages, identifies two types of such games:

- preparatory, contributing to the formation of speech skills;
- creative games, the purpose of which is to further develop speech skills and abilities. [6]

Communicative game is a training, including language, communication and activity tasks.[1]

To expand the collection of games, we tried to diversify them with games of different nations of the world. It was hypothesized that the communicative games of the peoples of the world can be used in English lessons.

Purpose of research was - the study of the games of the nations of the world, the creation of a collection of games applicable in English lessons in the third grade, as a means of increasing motivation to learn it.

Achievement of this goal was determined by a number of **tasks**:

- explore games of the nations of the world
- identify those games that will be applicable in English lessons.
- develop a series of communicative educational games.

Methodological basis for the research was scientific works of such domestic and foreign teachers as G.K. Selevko, N.D. Galskova, E.A. Pasova, E.A. Maslyko, A.A. Leontiev and J. Huizinga.

Among the games we found in different nations of the world, street games of a sporting nature represented the largest part. After careful selection, we were able to adapt some of the games to be applicable in English lessons.

The country in which the game appeared	Game names of nations of the world	Game descriptions of nations of the world	Adaptation of games of nations of the world for use in English class
China	Chinese badminton	Cut a circle out of thick cardboard - this is a ball. Paint it with watercolors, and stick chicken feathers in the center - four pieces - and fasten them. The player throws the ball and kicks it with a foot so that it takes off as high as possible. He repeats it as many times as he succeeds, making sure that the ball does not fall to the ground.	For the study of numerals. Students are divided into teams. Each representative of the team should take turns filling the racket and flounce as many blows as possible. All students count loud beats. It is necessary to record each number of strokes, and then calculate the amount for each team.
	Spin, spinning top	Children needed to find a needle-like object the size of three centimeters. Stick it in the middle of a small plate. Then you need to unleash a toy. Whose whirlpool is spinning the longest, won.	While the spinning wheel is spinning, the students retell the text or describe the picture along the chain, and the time for the entire retelling is noted.
	Chain poems	The first girl reads a line from a verse, idiom or proverb. The second girl continues the sentence using the last hieroglyph in the first sentence. The following players continue by analogy.	1) Students are encouraged to continue the poem or patter (The first student begins to recite a poem about the weather, another one continues, etc.), 2) Spiderweb of words (participants are given 1 word, their task is to write as many words as possible, turning the word into a "cobweb of words" a greater number is counted)

	<p>Puzzles or “Tiger Hunt” Games</p>	<p>The riddle was written on a red lantern and passed on to another person, if he could not guess, again passed. Another name for the game is "tiger hunting." At first, children were playing puzzles in the courtyards. Then the game was adopted by lovers.</p>	<p>Teachers distribute commands to teams during the Christmas season on a homemade flash-light. Their task is to write 5 questions (riddles). Then these lanterns are transferred to rivals teams. Their task: to write the answers to the questions posed and read them out loud. The winner is the team that will give more correct answers.</p>
<p>Japan</p>	<p>Card game with poems</p>	<p>Two hundred cards are taken. Write excerpts from the poems of the traditional Japanese poetic form Waka. In the game, the poems are divided into two halves: the first on one card, the second on the other. Players are divided into two teams, sit on a long mat in a line, turning to face each other. Cards containing the second part of the poems are equally divided between the teams, and the players lay them out in front of them on the mat so that each team member can see the text.</p> <p>The leader takes turns reading the first part of the poem. Players look at the cards, and if someone knows the continuation of the poem, he puts his hand on the desired card. If the answer is correct, he gets this card. After each quote the presenter waits a minute. If during this time the continuation did was not found, he reads further. Which team at the end has more "hits", won.</p>	<p>By the same principle, students find verb forms.</p>

	<p>"Rock-paper-scissors"</p>	<p>Need a cardboard board, as for chess, with directions. The arrows in the fields lead from the outer corner to the center, that is, to the "house". Participants must pass through the board with checkers of different color. Using a hexagonal bone or a circle, determine how many cells you can pass. In the center of the circle place the arrow on a pin or rod, which is twisted with both hands. At what number the arrow will show, that many cells can a player pass. At first, the right to the first turn is played. Two players stand against each other with their hands on their backs. At the same time, they utter in chorus: "Yan-ken-pong!" When pronouncing the last syllable, everyone stretches out his hand, depicting a stone, scissors, or paper. (These three subjects mean the words yang-ken-pong). A clenched fist — a stone; an open palm — a paper; the middle and index fingers, scissors. The winner is the one who is "stronger", who chose the "stronger" object. After it is determined whose first move, the bone is thrown, and the player advances on as many cells as dropped on the dice. If one gets on a cell, where something is written, he must follow this instruction. If one gets on the cell, where it says "Throw again!", can take another throw out of turn. Whoever gets to the "home" sooner won.</p>	<p>2 teams play. Before them is the playing field. Two players stand against each other with their hands on their backs. At the same time, they utter in chorus: "Yan-ken-pong!" When pronouncing the last syllable, everyone stretches out his hand, depicting a stone, scissors, or paper. The winner is the one who is "stronger", who chose the "stronger" object. With the help of the dice, it is determined how many steps can be made. After they determine whose first move, they roll the dice, and the player advances on as many cells as dropped on the dice. If he gets on a cell where something is written, he must fulfill this instruction: sing a song or move four cells forward, skip one turn or go back to the start. If he gets on the cell, where it says "Throw again!", He can take another throw out of turn. Whoever gets "home" sooner won.</p>
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<p>Greece</p>	<p>Odd or even</p>	<p>Two players facing each other hold beans in their right hand. One of them imperceptibly shifts a few beans into his left hand, then shows a clenched fist and asks the opponent: "Odd or even?" He replies, suppose: "Even!" Hidden beans opens his hand, and together, they count beans. If their number is odd, the one who hides says: "Give me one to be even." If the enemy answered correctly, he gets one bean. Then the roles change. This continues until one of the players runs out of beans. The one who collects all wins.</p>	<p>The students of the first team sit down at the first option, their rivals for the second. It is enough to give 2 pebbles (beads) to the first pair. One of them must guess "even or odd" in the opponent's right hand. So the participant who guessed the number of beads receives the task and performs it. For every correct answer-score. Next, the beads are transferred to another pair, etc. Task: guess as much as possible and give correct answers.</p>
<p>Denmark</p>	<p>Live bird</p>	<p>At the base of this game is an old Danish tale, about one nobleman, who went to war and gave his beloved bird to a servant and ordered to keep it and cherish. But when he returned home, he learned that the bird had died, and the servant was strictly punished for it. At least eight - ten people can take part in the game. They sit in a circle and pass a lit wand. In whose hands fire goes out, gives a pledge. When a player passes a burning wand to a neighbor, he says: "The bird is alive".</p>	<p>For L.E training on the topic "Clothing". The participants sit in a circle and call the vocabulary on the subject, passing a toy microphone. Whoever repeats or thinks for too long, should write a word on the blackboard that the participant spoke before him, or make a sentence with the word that will be said to him.</p>
<p>Spain</p>	<p>Catch the ball!</p>	<p>This game is played by standing in a circle. In the middle of the circle is the server and throws the ball where he wants and who he wants. Players must catch the ball. Whoever makes a mistake gets a penalty point. After three penalty points, the player is eliminated and fined. Standing back to the players, he gets the job. After each task, he must guess who invented it. If he guessed, he is released from the execution of the punishment; if not guessed, must execute it.</p>	<p>For the singular and plural nouns, or verb forms. There is a "king" in the circle, which throws the ball to any player and calls the word in the singular (the verb in the first form). The player who caught the ball must say the word in plural (give the second verb form) and give the ball to the "king". Unsuccessful retires. Whoever wins is the king.</p>

As a result of this work, the following conclusions were made:

There are folk games of the world applicable to English classes, which create an emotional background that is important for the emergence of a positive attitude towards the pedagogical process itself, the teacher and his assignments.

According to the results of testing, the hypothesis put forward by us was completely confirmed, use of communicative games effectively influences the formation of communicative skills among primary school students. The tasks we set have been solved, the goal has been achieved.

This elaboration of the series can be used in the practice of teaching English to younger students, enriching the “pedagogical workshop” of the English teacher in various topics.

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学生在学习过程中的爱国主义教育
**PATRIOTIC EDUCATION OF STUDENTS
IN THE LEARNING PROCESS**

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抽象。任何国家的历史和文化都是年轻一代爱国主义教育的基础。问题不会在很长时间内失去意义。为了人格的和谐发展，在一个人的生物存在的时间范围内理解一个人的地位，目的和使命是极其重要的。所有这些想法都将不可避免地引发关于爱国主义，祖国以及与之相关的一切的争论。但是，如果不了解基本原理，这种推理可能会导致很长时间；因此，对儿童进行适当的爱国主义教育的问题已经并且正在得到相当密切的关注。

关键词：爱国主义教育，人民文化，年轻一代，个人发展，爱国主义。

Abstract. *The history and culture of any nation contains the foundation for the patriotic education of the younger generation. The problem will not lose its relevance for a long time. For the harmonious development of the personality, it is extremely important to understand one's place, purpose, and mission within the time frame of one's biological existence. All these thoughts will inevitably lead to arguments about patriotism, the Motherland and all that is connected with it. However, without an understanding of the basic fundamentals, such reasoning can lead very far; therefore, the question of proper patriotic upbringing of children has been and is being paid fairly close attention.*

Keywords: *Patriotic education, culture of the people, the younger generation, personal development, patriotism.*

Norms and rules of behavior in society apply to all forms of human interaction with the world. Educated behavior implies that a person correctly responds to any events and not responding with anger to the negative. Today, for self-education there are all the necessary resources – a wide network of libraries, theaters, television, Internet. The main thing - not to absorb the entire flow of information, and learn to select the most valuable nuggets of truth.

To develop a culture of behavior, focus on aesthetic self-education. It develops a sense of beauty, teaches to understand and perceive the beauty of nature and art, to enjoy communication in a positive way [1].

Kindness and attention to others are the most important rules of social behavior. But the list of good manners is quite extensive.

Patriotic education is relevant at all times, and Patriotic education of younger students in the FSES (Federal State Educational Standards) becomes particularly relevant in today's environment. It is necessary to remember both parents and teachers, due to the fact that the priority of material values over spiritual ones is noticeable. Let us understand that we live in a difficult time for all, but to develop spirituality in our younger ones is our sacred duty. And we must do this for the deep development of spiritual qualities, a sense of patriotism and respect for others [2]. Parenting Teens in a respectful attitude to the Motherland and the traditions of our country will help to create a healthy moral-Patriotic and a sustainable and viable generation. Children of primary and secondary school age are emotional, ready for empathy, they have formed personal guidelines, moral and spiritual values and therefore it is necessary to regularly, if possible, daily educational work in the classroom and during extracurricular activities. It can be some actual time examples from life, examples from movies and cartoons. Schoolchildren at this age are influenced by adults and therefore it is necessary to explain the importance of national-Patriotic education to parents at parent-teacher meetings and involve them in joint work in this direction [3].

When raising a child, it is important that he learns to appreciate and love his homeland. Although today patriotism is not so popular among the younger generation, parents of younger preschoolers and children who are already studying in an educational institution should pay attention to this aspect. It is equally important that teachers devote enough time to issues related to the history of their country.

The purpose of Patriotic education is to create a civilized society in which citizens will respect each other. It is important that children understand what constitutes a historical heritage and how much the Motherland has done to ensure that the modern generation can live well. The goals of Patriotic education are, first of all, that young citizens learn not to hate other countries, but to love and appreciate their own [4]. This great feeling is formed from the earliest years.

The goals of Patriotic education of young people are that parents and teachers form in the minds of boys and girls empathy for what will happen to the Fatherland. It is also important that young people understand their responsibility and that they must do their utmost to make the country proud of them.

In modern society, there is an urgent need for Patriotic and moral education of adolescents, it determines the emergence of new challenges in the field of education.

The Federal program "Youth of Russia", approved by the decree of the President of the Russian Federation in 1994, includes the section "Development of citizenship and patriotism of youth", and the Federal target program "Youth of Russia" (2017-2018). The need to improve the level of citizenship and military-Patriotic education of young people is emphasized.

Modern society can be called youth. These young people will have to restore forgotten traditions and increase national foundations and traditions, which eventually cease to be significant. The conditions of social and economic instability make the Patriotic education of the younger generation relevant. In modern spiritual and moral conditions, it is necessary to teach a new generation to love their homeland.

To study the state of the levels of development of values of patriotism in adolescents, an ascertaining experiment was conducted in the SCHOOL № 27 of Vladikavkaz. It involved students of 7 classes. A total of 112 people.

Levels of development of values of patriotism at younger teenagers were established by the following indicators.

Knowledge of national traditions:

- love of country;
- the desire to help a person in a difficult situation (humanity);
- knowledge of national holidays.

Knowledge of cultural and historical values:

- protected areas of the native land;
- natural beauty objects created by human hands;
- names of great people of Russia and their merits to the Fatherland.

Recognition of the importance in human life of the priority of the spiritual over the material:

- the problem of moral choice in a particular situation;
- ranking of spiritual and moral values important for a person;
- knowledge of the country's wealth (climatic regions and natural resources, names of artists, etc.).

The levels of development of values of patriotism in schoolchildren were revealed by means of a complex methodology of educational research: monitoring of adolescents' behavior in the classroom and after school hours, and extracurricular activities, quantitative and qualitative analysis of productive educational and creative activities of students, questioning, interview, self-assessment, pedagogical experiment.

Components and levels of patriotism:

1st level–high.

Interest is expressed clearly, stands out purposefulness, manifests itself often in all types of activity. Correctly represents the notion of patriotism, can characterize his values. has solid knowledge of national traditions and names of patriots of the homeland (scientists in biology) and other countries. he always strives for intellectual and spiritual development [4].

He has a strong desire to observe the traditions of his people. With the entire seriousness of realizes moral involvement with the fate of Russia, obligations for it. Expresses a stable deep interest in the study of spiritual and cultural customs of his nation. Is desire frequent participation in events that are of a Patriotic nature. Is capable, without ceasing to strive in all situations to show Patriotic feelings. Their behavior is a desire from others to spiritual and moral development.

Level 2 - medium.

Interest is expressed, but does not stand out for the pursuit of a specific goal, is not often, more often associated with the personality of a particular child and his circle of communication. Oriented in the concept of patriotism, but can not always call its value. Knowledge of folk traditions of their and other nationalities are not complete, do not go beyond the curriculum. Periodically pays attention to the study of national traditions of the people. Not stands out not changing motivation to the study and observance traditions. He does not understand enough his involvement in national values, the fate of his native land, the Fatherland.

Level 3 is low.

Interest manifests itself in some cases, hasn't.

He has certain fragmentary visions of national Russian traditions, but knowledge is mainly related to his own worldview, the life of his family, the place where he grew up; or he does not know the historical and valiant past of his homeland, native people, his cultural heritage. He has no desire to work related to the manifestation of Patriotic feelings or love for the Motherland shows from time to time, often declares it. Has no desire for personal improvement for the good of the nation.

In order to obtain more accurate information about the studied indicators of values of patriotism and the level of development, the values considered in students of the 7th grade, a quantitative assessment of the level of development of indicators and components was also made.

5 points-the indicator is well developed: clearly expressed, expressed frequently and regularly in the educational process and in extracurricular activities of the student;

4 points - the indicator is developed quite well: it manifests itself clearly, but not regularly in educational work and in extracurricular work of the student;

3 points-the indicator is poorly expressed: it is not expressed, participates situationally in educational work and in extracurricular work of the pupil.

The analysis of the data obtained in the course of ascertaining research concerning the levels of development of the studied spiritual and moral traditions in students of this age allowed to make certain decisions.

When raising a child, it is important that he learns to appreciate and love his homeland. It is equally important that teachers devote enough time to issues related to the history of their country. The goals of Patriotic education are, first of all, that young citizens learn not to hate other countries, but to love and appreciate their own. This great feeling is formed from the earliest years.

Every teacher should understand what a huge responsibility falls on him. Teachers should prepare future defenders of the Motherland [5]. But in today's world to do it is not so easy. Only a person with high qualifications is able not only to understand the goals of moral and Patriotic education, but also to properly present them to the younger generation. Therefore, teachers and educators are encouraged to periodically attend specialized seminars and communicate with more experienced colleagues. When educating patriots, much attention is paid to the organization of museums, exhibitions, clubs and other events in educational institutions that will help children understand their purpose and the goals of Patriotic education more clearly.

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根据博洛尼亚宣言的要求, 俄罗斯数学教育的现状和前景
**STATE AND PROSPECTS OF THE RUSSIAN MATHEMATICAL
EDUCATION IN THE LIGHT OF REQUIREMENTS
OF THE BOLOGNA DECLARATION**

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抽象。 本文讨论了“博洛尼亚宣言”的目标, 旨在确保实施本宣言的目标。总结了俄罗斯参与博洛尼亚进程的结果: 俄罗斯教育体系的积极和消极结果已经根据“博洛尼亚宣言”的要求进行了改革。 注意到改善俄罗斯数学教育体系的主要方向。

关键词: 博洛尼亚宣言的要求, 俄罗斯数学教育体系, 俄罗斯数学教育体系的改进方向, 能力方法。

Abstract. *The article discusses the objectives of the Bologna Declaration, designed to ensure the implementation of the goals of this declaration. The results of Russia's participation in the Bologna process are summarized: the positive and negative results of the Russian education system, which has been reformed according to the requirements of the Bologna Declaration, are presented. The main directions for improving the Russian system of mathematical education are noted.*

Keywords: *the requirements of the Bologna Declaration, the Russian system of mathematical education, the direction of improvement of the Russian system of mathematical education, the competence approach.*

In September 2003, in Berlin, the Minister of Education of the Russian Federation put his signature on the document on Russia's accession to the Bologna process.

We present the objectives of the 1999 Bologna Declaration [1], designed to ensure the fulfillment of the goals of this declaration: 1. Adoption of a system of comparative degrees, including through the Diploma Supplement. 2. The introduction of two-cycle training: preliminary (undergraduate) and graduation (graduate). 3. Implementation of the European system of transferring credits of labor input - the ECST (European Credit Transfer System). 4. Expanding the mobility

of teaching and other staff by offsetting the period of time they spent on work in the European region. 5. Promoting European cooperation in ensuring the quality of education. 6. The introduction of intra-university education quality control systems and the involvement of students and employers in the external evaluation of the activities of universities. 7. Assistance in the development of curricula, mobility schemes and joint training programs.

Over 15 years of Russia's participation in the Bologna process allows us to sum up some of the results.

In Russia, as, indeed, in many European countries, the main form of training professional personnel through the system of higher education was specialty. The transition of the Russian system of higher education to a two-tier system (bachelor-master) led to the break of old curricula and programs in the absence of a full-fledged replacement.

Hoping for a competency-based approach that has replaced the knowledge-based one in the educational system is unlikely to provide the educational results that the state and society expect. (I am still amazed at how our teachers and teachers who did not know such words as competence, teaching technology, etc., managed to learn my generation (being born in 1950)).

The changes taking place in the national education system in the early 90s of the 20th century were called “reforms”, and then they suddenly decided that it was not a reform, but “modernization”. But the changes that are taking place are so dramatic that, most likely, it’s still all about “reforming.”

And since we live in the conditions of the collapse of the superpower, a sharp change of ideological, political vectors in our life, the modern demands are so revolutionary that they require a reform of the education system, not its modernization.

Most of the recommendations, including those coming from the Bologna Declaration, taken in sum, meant a cardinal breakdown, or rather, the destruction of the previous system of national education.

But, knowing that the domestic (Soviet) education system was one of the best in the world, we should, first of all, think not about the destruction of this system, but about ensuring the inheritance of the education system under construction and the previous system.

I.M. Ilyinsky, President of the National Union of Non-State Higher Education Institutions of Russia, in his Internet speech [10] notes: “I have seen (and still see) that many employees of the ministry and other educational departments literally wallow from fatigue in their desire to “reform” and “modernize” education. ”

A.V. Shevkin remarks: “We are reforming, reforming education, but it is not being reformed. Brest Fortress of Russian education is not giving up. The reformers have one thing left: to block the influx of combat-ready forces to it...” [14].

It is appropriate to quote P.Ya. Chaadaeva: “A completely special view can be established on the educational business in Russia, it may be given a national basis, fundamentally at odds with the one on which it is based in the rest of Europe, for Russia has developed in every way differently, and it has its special purpose in this world. ”.

At an international scientific conference held in Veliky Novgorod on December 4-8 of December, 2007, it was noted: “... it can be stated that until now, the Bologna process brought Russia mainly destruction, illusions and unreasonable hopes were dispelled” [4].

V.P. Odinets notes on this occasion: “However, this is not the fault of the process itself, but of those who led and lead its implementation in Russia, without thinking about the consequences or not understanding them. Moreover, the Bologna Declaration itself emphasizes that “...all its provisions are established as measures of a voluntary reconciliation process, and not as strict legal obligations”” [15, p. 9].

I'll cite another document: reports of the World Bank, which simultaneously with the Bologna Declaration radically influenced the educational policy of Russia.

In the first report of the World Bank “Russia: Education in Transition” dated November 22, 1994 № 13638-RUS made many recommendations to the Russian leadership: “close pedagogical institutes, close vocational schools, introduce per capita funding for schools based on the level of expenditures for one student, etc.” The report also expressed the view of the “injustice and inefficiency of the examination system”.

Other reports were made in the same spirit, notes I.M. Ilyinsky. For example, the report “Updating Education in Russia (Regional Level)” under №. 18666-KN.

I.M. Ilyinsky expresses caution on the recommendations made in the reports of the World Bank.

The authors of the report did not say how, for example, the examination system should be made effective, but it was from this moment (1999) that the idea of the Unified State Exam (USE) came to Russian education, which generated heated debate. The USE was transferred to the long-term “experiment” mode, and, as I.M. Ilyinsky correctly notes, [10], the experiment was doomed to “crushing success”, since the experimenters were carriers of this idea ... The “green” traffic light for the USE was open, and 2009 was the year of total USE-ization of Russian education. Without proving any of his “undeniable advantages” over the traditional system, it was declared the most “effective and fair” way of testing knowledge.

Note the opinions of some teachers and scientists about the USE exam.

V.I. Ryzhik emphasizes: “USE is a time bomb” [16, p.64].

The article “The crash of illusions: No “therapy” will help reforms” [13] notes:

“The Unified State Exam - 2014 did not show serious scandals and violations (the result of harsh, almost police actions taken during its implementation). But more importantly, it did not show the main thing - knowledge among schoolchildren. ... To say that the results of graduates have declined markedly is to say nothing. The risk of a surge of public discontent, both in regard to the deplorable state of a school and the unacceptably large number of students and “non-students” forced to sharply lower the level of requirements for getting a 3” [13, p.10-11].

In order to put 3, the “3 bar” in mathematics in 2014 was reduced from 24 to 20 points. Professionals understand that this is essentially “zero” knowledge of mathematics.

V.I. Ryzhik [16] points out the following disadvantages of the USE: it does not correspond to the values of mathematical education; does not consistent with national traditions of mathematical education; structurally ridiculous; provokes teachers to activities unusual for them; creates the illusion of objectivity.

In March 2010, at a conference of European ministers of education in Budapest and Vienna [4], Russia announced that the four goals set in the 1999 Bologna Declaration over the years of Russia's accession to the Bologna process were fully met by Russia [1]. We indicate these goals: expanding access to higher education; improving the quality and attractiveness of European higher education; increased mobility of students and teachers; ensuring the successful employment of graduates taking into account the requirements of the labor market.

My more than 40 years of experience in teaching mathematics at school and university allows me to make some comments on the allegations that Russia fulfills the four goals of the Bologna Declaration.

Regarding the first goal. Until September 2008, the actions of authorities at the federal and regional levels contributed to the expansion of access to higher education. But, it should be noted that this was carried out mainly at the expense of paid education. But since September 2008, the government's policy has been aimed at restricting access to higher education (reducing the number of students enrolled in budget places; closing a number of small universities and branches (even where they were city-forming), etc.).

Regarding the second goal. I will only give sound opinions of scientists and teachers.

Rector of Moscow State University, Academician V.A. Sadovnichy said at a September 2009 meeting of the Russian Congress of Rectors that approximately 60% of first-year students of the two faculties “failed” the math test in the unified state exam (faculties of mathematics and computational mathematics). And this is in the most elite Russian university! And what about other universities?

An experienced teacher of higher mathematics from the Research Institute of MEI E.P. Bogomolova notes: “While on paper the bar of mathematical education of future bachelors and masters rises higher, in reality, teachers are forced to lower the bar of requirements for students lower and lower” [2, p. 3].

Noteworthy is the statement of the teacher of mathematics D.D. Gushchina, that our “best physical and mathematical education” is already so not best that it’s not even an education.

Many scientists and practitioners have noted a sharp decline in the level of mathematical education in Russia.

One of the reasons for this is a sharp reduction in the new curriculum for the preparation of bachelors in the direction of “Pedagogical Education”, the profile of “Mathematical Education” [17] the number of hours for studying mathematical disciplines.

A sharp reduction in the number of hours for mathematical disciplines, as practice shows, leads to the fact that students do not form either the “notorious” subject knowledge, skills, nor competences proclaimed by modern standards.

It should be noted that in the standards of general education [18] the emphasis is also placed on "providing mainly educational and general cultural training." Hence the order of requirements for the results of mastering the main educational program: personal, meta-subject and the objective results are only in the last place.

An analysis of the content of the Federal State Educational Standards of Higher Professional Education in the direction of training “Pedagogical Education” (qualification (degree) “Bachelor”) [17] shows that they lack a substantive component. There is not a word in it that the subject teacher should know his subject at least in the volume of the school course. It is noteworthy that in the new updated educational standards, among the competencies assigned to the state final certification, there is not one that would test the subject preparation of the graduate.

The list of competencies specified in the updated standards to be diagnosed at the state final certification suggests that substantive, in this case mathematical, training is unimportant.

It is known that the competency-based approach was born not in pedagogy, but in the business environment. Its author is usually called the psychologist D. McClelland, linking the situation of industrial (or commercial) success with specific human qualities (competencies). Created “models” of competencies, including a scale of levels of their assimilation, served primarily the goals of professional selection of personnel in the labor market. Subsequently, the quality of European bachelors began to be assessed in the same way, based on the developed lists of “educational competencies”. I note that this level corresponded approximately to the level of training of college graduates in Russia.

O. R. Kayumov notes that the inclusion of the mechanism of the Bologna process in action in 1999 suggested: “... providing large-scale student mobility. For the Russian Federation, which signed the Bologna Charter in 2003, this meant an increase in intensity on a one-way road” [11, p. 150]. This was facilitated not only by subjective factors, but also “more significant obstacles explained by the

incompatibility of the most competent approach with the traditions of education in Russia” [11, p. 151].

O. A. Donskikh rightly notes: “... if we talk about higher professional education, then the competency-based approach is applicable first of all to its component, which is aimed at the formation of specific professional skills. That is, to where education is identical to training” [9, p. 37].

It is appropriate to quote O. R. Kayumov’s statement: “The more the educational process differs from training, the more useless are the competency criteria. In this sense, for Russian universities, “Bologna recommendations” turned out to be even more dramatic than for European” [11, p. 152].

The reader will find material on the state of Russian mathematical education in our publications [5, 6, 7, 8] and in work [19].

To fully achieve the third goal of the Bologna Declaration, a good financial base of universities is needed, which does not meet the requirements today.

Achieving the goal of successful employment of university graduates is hindered by many factors: abandoned state of industrial enterprises, where university graduates could go to work; students' unmotivated choice of professional activity at the stage of entering a university; insufficient wages of specialists in a particular field of activity.

Much work remains to be done, be it “modernization” or “improvement” of the Russian education system.

The main areas of improvement (or rather salvation) of the Russian system of mathematical education can be: the rejection of a two-level (bachelor and master) system of training of a mathematics teacher and return to training a mathematics teacher through a specialty (medical workers were able to defend their right to prepare medical personnel through a specialty!); the elimination of the trend of a sharp reduction in the number of hours on the subject and methodological training of teachers of mathematics.

A competency-based approach facilitates the task of evaluating performing skills, but extremely complicates the planning process for training engineers, doctors, teachers, etc. If the competency-based approach remains the methodological basis of the education system, then the issue of planning the educational system in those universities in which the educational process differs from training should be addressed immediately.

It is clear, that classes in mathematics and pedagogy should differ in form. In mathematics, there is "one truth", and in pedagogy there is a "poly-paradigm", which means attracting subjective opinions for classes in pedagogy is natural, and for mathematics it is absurd. It remains to solve the problem of the features of using the competency-based approach in teaching the humanities, natural sciences and mathematics.

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信息资源科学理论中一般哲学规律的具体化

CONCRETIZATION OF GENERAL PHILOSOPHICAL LAWS IN THE THEORY OF INFORMATION RESOURCE SCIENCE

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抽象。 该报告致力于信息资源理论, 其任务之一是发现定义信息资源运作条件的客观规律。

关键词: 信息, 信息资源, 信息空间, 信息资源科学, 理论, 确定性部分, 一般哲学规律, 一般信息法。

Abstract. *The article is devoted to the theory of information resources, one of whose tasks is to discover objective laws that determine the conditions for the functioning of information resources.*

Keywords. *Information, information resources, information space, information resource science, theory, deterministic section, general laws of philosophy, general laws of informatics.*

The scientific area called "Information Resource Science" was initially formed as an organizational, methodological, technical and technological knowledge. However, today, its theoretical section is also developing, and our research focuses on it (1, 2). I consider that the most important result of my research includes 1) the creation of an adaptive and evolutionary concept of information and information resources; 2) distinguishing the basic notions of this concept, defining and dividing them into epistemological and ontological assumptions (3, 4); 3) a synthesis of existing knowledge about objective laws of informatics. The definitions of such interrelated notions and phenomena as "information", "information resources" and "information space" claim to be essential. They are the starting point for the conceptual apparatus of a new research area. The definition of information and information resources as adaptation tools requires learning *the laws* of the origin and functioning of this *adaptation toolkit*. General laws of philosophy and achievements of science studies has become the methodological basis of the deterministic section of information resources, for example, clarification and differentiation of the notions of "*law*" and "*pattern*": "Laws are notions that are

part of theoretical knowledge, and patterns are probabilistic empirical knowledge obtained in the process of observing facts of the real world and experimental studies "(5, p.10). Moreover, theoretical knowledge is appreciated more than empirical experience, since it has such properties as consistency and logic. It is known that **the Law** fixes necessary essential connections regardless of whether they are familiar to anyone or not (6, p.239). Therefore, we can talk about the unity of *law and essence*. A.V. Sokolov emphasizes that to know the essence of a phenomenon means to find out the laws that this phenomenon follows (5). Consequently, we discover **the Law-essence** whenever we create *an essential definition* of a phenomenon revealing the generic *connection* of this phenomenon with related phenomena by specifying signs of *similarity* and distinguishing this phenomenon from similar ones as a new kind by showing its *differences*. Besides **the Laws-essences**, there are **Law-dependencies**. They reveal the relationship between the phenomena under consideration. It is quite often a *functional relationship*. A.V. Sokolov says that the *essential functions* are nothing but *objective laws-dependencies* that govern the activities of a social institution. These laws cannot be repealed or replaced by new ones. *The formation of specific functions of each type of information* is an objective and natural phenomenon. The movement of information in society is impossible without it as well as the formation of society. **The identification and differentiation of functions** of different types of information **reveal the essence of each of these types**, which makes *the law*. Laws of informatics are often found out through making abstractions. Levels of abstraction allow dividing laws of informatics into **general (inter-sectoral) and private (sectoral and intra-sectoral)**. *The first* laws operate in the entire infosphere when creating and distributing information resources; *the second* either appear only within the framework of individual sectors and organizational structures or reveal private laws and patterns, which can act only within a separate technological cycle of creation or functioning of information resources. This article covers only general Laws.

According to philosophy, objectively existing laws are **dialectically** interrelated, but it is important to understand that these general laws are concretized and can exist in the form of laws of informatics (7). Thus, **the Law of the negation of the negation** is implemented whenever the old occurs again at a higher stage of development. At the same time, the most important (**generic**) signs of the phenomenon are usually not affected, but it all comes down to the transition of some signs to others. The law of the negation of negation becomes evident when replacing the old with a new, more perfect one, but at the same time, *the nature of new objects remains identical to the nature of the preceding phenomena*. The denial of old ways of communication and the emergence of new information products and services creates new conditions for human life and prerequisites

for the implementation of **the Law of the transformation of quantity into quality**. The effect of these dialectic laws is widely spread due to the worldwide IT penetration and digitalization of the economy, life and other spheres of human life. **The law of unity and struggle of opposites**, which philosophers consider the source and driving force of the development of nature, society and thought, reveals as a multi-level phenomenon most vividly in the information sphere. The struggle of opposites is their interaction, where the existence or development of one of them is achieved by destroying or limiting the other (6, p.222). Within the information space, you can discover causal relationships and get explanations of many phenomena by understanding the actions of objective laws, but, concerning the infosphere, it is necessary to discuss a softer form of opposites and use the concept of "contradiction". Genetically, the initial and therefore the most common manifestation of this law is *the emergence of Information* as a result of isolating man from nature because of *the emergence of human consciousness*. *The two-element structure* of information and phenomena derived from it is expressed as *a dialectical unity of meaning and sign* (8), and this generic characteristic makes all informational phenomena dual. Duality was noticed by O.P. Korshunov. According to him, this characteristic explains the reasons for the rise of bibliographic information (9). Then, it was reflected **in the Law of duality**. However, the structure of bibliographic information and the composition of its elements were determined by *the duality* of the Document. A document is a real unity of material and spiritual elements. In the process of evolution, documents became more variable. The arising contradictions between documents showed the advantages of some and the limited viability of others. Thus, information communication objectively emerged and its forms were replaced. As far as the functioning of documentary communication is concerned, duality has a different form of existence. It was revealed by O.P. Korshunov **in the Law of Structural Dualism**, which reflects the simultaneous assignment of the phenomenon "bibliographic information" not only to bibliography but to the sphere of the activity being served (9). On this basis, the relative independence of secondary information documents is revealed and a thesis on the absence or weak organization of social institutions that create and provide secondary information is formulated. Nevertheless, the laws of duality and structural dualism are the Laws that *reveal the essence of all informational phenomena*. Moreover, they are their cause: neither information nor its derivatives can exist without their action. One of the forms of overcoming the contradictions between information and the consumer is the creation of conditions for achieving *conformity* between the components of the information system. In the 60s of the twentieth century, in the framework of library science, Yu.V. Grigoriev phrased **the Law of Conformity** (10). Then it was developed by Yu.N. Stolyarov (11). It was mentioned in Ranganathan's works (12). O.P. Korshunov

also discussed **the Law of Double Conformity** (9). The knowledge of the effect of the Law of Conformity became the rationale for overcoming contradictions between the elements of the Information and Consumer system.

Having studied the results of the development of the problems of determinism in the infosphere, we **acknowledge** that the name of the same Law of informatics very often varies in different sciences. Consequently, it complicates the study. Another difficulty is caused by the detail that each Law is "...the dialectical unity of facts of life and development" (9). In any informational phenomenon, there is a fusion, i.e. overlapping of several signs: the preceding, the existing and the emerging ones. In reality, each informational phenomenon demonstrates *the simultaneous* integrated influence of different, sometimes contradictory, objective laws. It is what **the Law of evolutionary continuity between the properties and functions of various phenomena of the information sphere** (T.F. Berestova) says. This law was discovered when the functionality of different types of information was studied. The law is as follows: *each new type of information always inherits the properties and functions of the previous type, but, moreover, each new type has a new specific (its own) function that determines its essence and origin.* We believe that, at the same time, there is a concretization of **the Law on the constant growth of the amount of information and the increase of its diversity**, and this Law itself is a specific case of **the Law of Diversity**. The latter is known to representatives of different spheres of science. The effect of the Law of Variety in the information sphere *is connected with the objective need to overcome information barriers* (13), which determines *the inevitability of structuring the information space: The variety of meanings and forms of their expression leads to a variety of information resources, as well as a variety of ways to create and provide them, i.e. the emergence of new technologies and new social institutions; therefore, information space is structured and multidimensional* (T.F. Berestova). **The Law of Requisite Variety** in cybernetics is phrased by William Ross Ashby (14). The leading Russian informatics scientists B.E. Odintsov and E.V. Lutsenko phrased *the Law of Intellectualization of Information Technologies* (15, 16), which is also a particular manifestation of **the Law of Variety**. After all, each new technology multiplies and diversifies the number of adaptive tools of the infosphere. The law of variety is specified in **the Law of Metamorphism** (Yu.A. Grikhanov, T.F. Berestova) (17, 7), which explains the reasons for mutual transitions of some informational phenomena to others. We phrased the Law as follows: *the metamorphosis of information phenomena becomes possible due to the common genetic basis of all information phenomena and the processes of furcation of primary (factographic and conceptual) information* (T.F. Berestova). *The law of metamorphism is inherently close to the Laws of Document Studies* (Yu.N. Stolyarov) (11). The most important of them is *the Law of Documentation*. It

says that *every socially significant act needs documentary recording*. Yu.N. Stolyarov considers "the emergence and functioning of a colossal variety of types of documents" consequence of this law (11, p.17). He asserts that "all social institutions are documentary systems" (p. 18). Thus, *the laws of document studies* can be considered *particular forms of the law of variety*. Yu.N. Stolyarov phrased them as follows: *"the same information can be recorded on different media"; "different information can be recorded on the same media or the media of the same type"* (p.23). Yu.N. Stolyarov asserts that the effect of the laws of document studies (p.18) is influenced by "the demand for the document to meet the needs of the external environment" as well as by the fact that "each area of human activity is able to create separate types of documents for their own needs, but these types can be used later and in other spheres "(p.20). At the same time, there is a "constant increase in the document array" (p.19). The above-mentioned Law of Documentation reflects one of the forms of the effect of **the Law on the mandatory inclusion of information in any sphere of life activity of the individual and society**. Man cannot live outside the world of information. From the moment Man turned into a member of society, a social space filled with information resources began to be created and improved. Therefore, the following statement can be considered another Law of informatics: *information resources are an obligatory part of the activity of any person and any society* (T.F. Berestova).

The above-mentioned **Law of multidimensionality of the information space and the inevitability of its structuring** says that *structuredness and multilevelness are a distinctive feature of any information space without which it cannot function*. This assumption is appropriate for territorial, sectoral or departmental information space and the space specified by purpose, specific activities or age of a particular social group; based on its infrastructural technical characteristics. The structure of the information space that exists through handwritten and printed communication has already been well studied. However, today, we witness that the electronic information space also undergoes the inevitable structuring by characteristics of the creator; by type of recorded (documentary) and unrecorded; primary and secondary information resources (by purpose, content, reading purpose, signs of characters and / or language, etc.); by social information institutions and other organizational forms; by the technologies used; by domain names and other parameters. The science called *synergetics* studies the processes and results of structuring. It is the theory of the structural modelling of the world (18, p.149). The subject matter of synergetics is self-organizing systems. The information sphere is one of such systems. Synergistic effects are associated with the appearance of fluctuation points, which can occur randomly, but when repeated, they become the main cause of spontaneous structure genesis including the formation of a multi-level information space. The transition of human societies

from non-verbal (wordless) forms of communication to verbal (verbal) exemplifies it. The appearance of fluctuation points born by word-formation brought chaos into the non-verbal communication that existed for more than one millennium, but that repeated fluctuation was the beginning of *the end of the chaos*. Subsequently, structure genesis gave rise to other forms of social communication. Cases of overcoming chaos in the history of mankind are quite frequent. It was vivid in the information and documentary sphere. Thus, Yu.N. Stolyarov asserts that "the appearance of each new type of document is the result of a synergistic effect or a synthesis of the most significant achievements of the intellect and technical inventions of the time" (19). However, due to the transformation of *chaos into a certain order* (20, p.175), the stability of society was achieved. The processes of furcation of information phenomena led to the emergence of multilevel and multidimensional information space, which is the result of *self-organization and self-development* of the information system. With the increasing complexity of the life of society in the information space, various "dimensions" arise. In addition to the three-dimensionality that is typical for the physical space, semantic, sign-language, target, technical, technological and other dimensions are formed. All of them are integrated into each other. The purpose of creating the information space is to ensure a comfortable existence of people. The information space is necessary to ensure the systems of vital activity of the society for the effective functioning of the economy, education and science. People need to adapt to the information space, which they construct themselves. The need to achieve this goal forms the objectivity of the emergence of dependencies, which are reflected in the effect of **the Law on ensuring integrity, unity and comfort of the information space: *integrity, unity of the information space, its comfort (adaptation) for the individual and society will be provided if the information space has a multi-level design (structure), if various functionalities of information and information resources are formed and differentiated*** (T.F. Berestova). Constant growth and increasing diversity of information phenomena objectively caused assorted information barriers (13). The complexity of overcoming them endangers *the comfort* of individuals in the information space and dramatically *reduces a person's adaptability* to the information environment. These factors encourage a decline in *the sustainability* of the Information-Consumer system, so there is *a risk that the equilibrium* between the information consumer and the information space *will be destroyed*. In this case, the information space ceases to be proportionate to the individual. The life of all living creatures on Earth is subject to the effect of **the Law of Self-Preservation**, which also operates in the field of information. With the destruction of the equilibrium of the dual information system, there are threats to the individual. They can be associated with the occurrence of mental disorders/dependencies and the emergence of several diseases. It is possible to eliminate

a threatening situation if **the Law of organizing and limiting information** is implemented. This law says that *the higher the level of organization of the system (where information acts as a means of organizing the system and characterizes its degree of organization), the higher level of regulation and restrictions should be* (A. Bogdanov, B.E. Odintsov) (21, 15). However, when limiting variety, there is a threat of stagnation. It is well known that the phenomenon of stagnation arises only when a complete identity (sameness) is reached between the elements of the system. In the information space, the threat of stagnation is tiny, because the intelligence of individuals is the initial, fundamental and system-forming element of the information space. However, two identical people cannot exist. Information resources, as products of human activity, bear the imprint of the personality of their creators, so they are diverse. The diversity of elements of the information space protects it from stagnation, but at the same time, due to the high diversity, it is very difficult to ensure its human proportionality. The need for human proportionality between the individual and the information space is dictated by the Law of Noospheric Humanism (Vernadsky's Law), but as far as the infosphere is concerned, this law is poorly understood. Attempts to solve the problem of human-proportional information systems have already been made, for example, **the Law of Conformity** and the development of various technologies for the selection (choice) of information resources that remove quantitative and assorted information barriers are aimed at this. Limiting the variety of the infosphere is achieved by creating special diversifying barriers that are raised through the adoption of legislation regulating the activities of the infosphere subjects, through the introduction of organizational and administrative documentation and state standards (the latter are very common in publishing and bibliographic activities). Ensuring the comfort of the information space depends on the work of information intermediaries. Those who are professionally involved in the organization and management of information processes should be guided by **the Law of proportionality of the controlled and controlling systems**. Its content is specified through the effects of the laws: **the Law of Conservation of the Internal Dynamic Balance of the Information Space, the Law of Social and Ecological Balance, etc.**

It is necessary for everybody who creates and consumes information to know the objective laws of informatics. It is important to understand that **the consequences of violation** of the laws of informatics are often difficult to minimize because it requires a lot of intellectual, time and material costs, and sometimes these consequences **cannot** be eliminated at all.

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思想的艺术创新

曼苏尔GILYAZOV的MONODRAMA “MIKULAJ” (2019年)

**IDEOLOGICAL AND ARTISTIC ORIGINALITY
OF MONODRAMA "MIKULAJ" (2019) BY MANSOUR GILYAZOV**

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抽象。 文章讨论了曼苏尔·吉利亚佐夫 (Mansour Gilyazov) 的单音乐剧 “Mikulaj” (2019年), 其基于真实人际关系中的得失故事。 该剧的主角 - 塔塔尔 - 克里亚申命名为米库拉伊, 在他自己的自我历史中展示了自我决定的过程。 该论文证明了该剧的基础在于基本类型的冲突。 该剧中的一个关键问题是现代人的身份问题。 与Antoine Saint-Exupery的小说 “夜间飞行”, 歌曲的主题 (“昨天”; “巴黎, 巴黎 (“玻璃蛋”)”, 光的对立面, 艺术作品中扮演着巨大的角色。 和黑暗。

关键词: 鞑鞑文学, 鞑鞑戏剧艺术, Mansur Gilyazov, monodrama “Mikulaj”, Tatar-Kryashens, 伏尔加地区鞑鞑人。

Abstract. *The article discusses monodrama "Mikulaj" (2019) by Mansour Gilyazov, founded on the story of gain and loss in real human relationships. The protagonist of the play – Tatar-Kryashen named Mikulaj is shown in the process of self-determination in his own ego-history. The paper proves that the basis of the play lays in the essential type of conflict. One of the key issues in the play is the problem of modern man's identity. A huge role in the work is played by the artistic parallel with the novel "Night flight" by Antoine Saint-Exupery, the leitmotifs of the songs ("Yesterday»; "Paris, Paris ("Glass egg")", antithesis of light and darkness.*

Keywords: *Tatar literature, Tatar dramatic art, Mansur Gilyazov, the monodrama "Mikulaj", Tatar-Kryashens, the Volga region Tatars.*

Introduction

Tatar playwrights very rarely work in the genre of monodrama. For the first time this genre was tried in 1988 by playwright Rizwan Hamid (the play “Dust of big road”) [Hamid]; in 2019, his disciple Mansur Gilyazov followed his example

(play “Mikulaj”) [Gilyazov, 2019]. At first glance, it may seem that between these two works there is an ideological roll (the problem of lonely old age), however, if you read the works deeper, it is easy to detect their differences. R. Hamid focused on the problem of fathers and children, and M. Gilyazov – on the problem of identity of modern man. Play “Mikulaj” resonates with his earlier playwright “Bichura” [Gilyazov, 2002]. The theoretical basis of our research are scientific works dedicated to the study of the modern Tatar drama ([Zakirzyanov A. M., Ghilazov T. S.], [Akhmetzyanova G. A. Zakirzyanov, A. M., Motigullina A. R., S. V. Sheyanova], so the works of R. Hamid ([Zakirov, 2010] and M. Gilyazov. Scientific-methodological basis of our research mares the works on monodrama [Monodrama], [Ageev], [Bondareva]; on the problem of identity of the literary hero image ([Muhametshin B, Khabutdinova M, Khabutdinov A. J.], [Latypova, Khabutdinova, Zakirzyanov], [Mashakova, Habutdinova]. The novelty of our research consists in the introduction of a new source into scientific circulation – M. Gilyazov's monodrama "Mikulaj" – and in the identification of the originality of the artistic embodiment of the modern man identity problem in this work.

Methods

When considering literary texts, we used the method of semantic analysis, historical and cultural, comparative and comparative methods.

Results and discussion

The play “Mikulaj” was created by M. Gilyazov in the genre of monodrama. This is the first experience of the playwright in this genre. The writer exploits the plot of the loss and acquisition of genuine human relations. We see a sequence of mental and emotional states of the hero, who has found himself in a critical situation caused by prolonged forced loneliness. The theme of revaluation of values is strengthened in the monodrama with the help of Paul McCartney's song "Yesterday", which turns into a leitmotiv of play. This song is considered to be one of the most romantic and sentimental in the world, because there is no person in the world who would not have had *yesterday*, who does not want to let it go in order to meet *today*.

M. Gilyazov tries to convey to the reader the essence of his artistic concept through the literary parallel with the novel “Night flight” by A. Saint-Exupery. Following the French writer the author of “Mikulaj” monodrama reflects on the meaning of human life and death. In fact, the key question in the novel becomes that A. Saint-Exupery puts into the mouth of the Director of the Riviera airline: “although human life is more expensive than anything, but we always act as if there is something even more valuable in the world than human life... But what?” [Saint-Exupery]. M. Gilyazov also takes the reflection beyond the present life situation, focusing on what a modern man is not, but what he should be. In contrast to the novel "Night flight" the author of "Mikulaj" solves this problem, including that from a religious point of view: "You can not forcibly change the faith of man" [Gilyazov, p. 5]. (See the story of the Martyr father Philip; the dream of Mikulaj about the opening of the Church in the village).

The monodrama has two substantial layers. First, there is a real layer, which describes the life of Mikulaj and the fate of the villagers.

The main character is a lonely old man Kryashen of 60 years, who spends his days in the village of Sarsaz kyul (Lake of yellow clay). Kryashens are an ethnic group of the Volga region Tatars, who are Orthodox Christians by belief. To the viewer/reader the playwright gives a happy opportunity to “live” with the hero one day of his life. In the final of monodrama it turns out, that this was the latest day his life. Before us unfolds the story of the modern average “little man”. From the first minutes of acquaintance with Mikulaj we find him in a strange occupation – a production of his mother’s doll. Listening to his memories of his parents, we begin to understand the drama of the hero position. A lonely man is always thinking aloud. Many of the hero's monologues are addressed to the hall.

The basis of the conflict in the play is the essential type of conflict. In the eyes of the audience, Mikolaj is going through a process of self-determination in their own ego-history. He faces himself as Another one (past, present, future).

We are witnessing the “recognition” of the hero by himself:

- his ethnic identity – “beautiful Kryashen.”

... to be honest, all Kryashen are beautiful. I have not seen any ugly Kryashen in my life! [Gilyazov, 2019, p. 2].

Kryashens like children in a special way [Gilyazov, 2019, p. 4].

The process of "recognition" of hero proceeds through the encounter with Another ones: Mikulaj compares the Kryashens with the Japanese, the villagers – with the city, the Kryashens with the Tatars.

Ethnic originality of Kryashens is revealed in the play through the tradition of naming:

The name I have is also a nice one... Mikulaj!.. This name was found by my mother Actually, in my passport there is a different name, Nikolai. But we are Kryashens, we speak Tatar, therefore, our names are of Tatar sound. Mama love told Mikulaj-j-j!.. Mi-mi-mi-mi, it is a beautiful note! Kulaj! Kulaj, means, convenient, handy, you can live with me! My mother's name was Marina! Not Marina, but Marina! (Emphasis on the last syllable.) My father’s name was Vechli! According to passport Basil, in the life -- Vechli, that's it! [Gilyazov, 2019, p. 4].

We Kryashens, are small people... So each person is on account [Gilyazov, 2019, p.5].

... No one forcibly baptized us.... We have always believed in the prophet Jesus... [Gilyazov, 2019, p. 6].

- his social status – "Terribly rich! Maybe one of the richest people in the world" (p. 3).

He has 19 abandoned houses and 30 hectares of fertile land in his disposal. Mikulaj feels pride for his homeland, rich in natural resources (oil).

- "Aligarh" [Gilyazov, 2019, p. 9], because he lives without a cell phone and the Internet.

"Who else in this world has such a bath? The felling made of century-old pines! The ceiling of aspen! Rocks-boulders from the bottom of our lake! The brooms! Young oak and grass from our fields! Emerald water!.. Emerald water!.. Pearls!.. I am an Aligarh! Me! I am an Aligarh!.." [Gilyazov, 2019, p. 17].

- Homeland

"Neither your grandfather nor your father abandoned the village" [Gilyazov, 2019, p. 13].

The theme of native land protection is repeatedly raised in the monodrama. The hero returns to it again and again, remembering one or another villager, he feels bitter shame that due to illness he was not taken into the army. He reveals story of village elder named Merkur, who blinded himself in order not to go to war. The heroic theme is supported in the monodrama through an appeal to the Nagaibak song "Paris, Paris (Pyala Kukai)". It refers to a village in the Chelyabinsk region (1842-1843), named in honor of the victory of the Nagaibak Cossacks led by ataman Platov, who finished the Patriotic war of 1812 in the French capital in 1814.

- destiny – the hero has a "super-task": he wants to return the inhabitants to their homeland. As a fabulous hero, Mikulaj wrestles hard to overcome the "short-age" in the village, where the lake has disappeared. Perhaps, this natural cataclysm happened because of active oil production, but the hero is sure that the tornado is guilty of everything.

Mikulaj has the "minimum objective" –

"I even have to marry Anfisa!" [Gilyazov, 2019, p. 15].

"The first thing to do is to find Anfisa and my son. They should be here with me..." [Gilyazov, 2019, p. 25].

The world in the monodrama has a two-part structure: the patriot of his native land Mikulaj is opposed to those who have forgotten their duty to the homeland. So, it is shown in the play as the antithesis of "people of action" and "philistine".

In one of his monologues Mikulaj gives a verdict to his epoch:

"One person doesn't count! And how many people do you need to give them light, open the road? Five, ten, a thousand? Is there such a norm that a person should be treated in a human way?".. [Gilyazov, 2019, pp. 6-7].

So at the level of subtext, *the people and power*, *the ideal ruler* themes, are developed in the play.

- *male and female identity* (mother and father love story, three Neshtecs in Mikulaj's life, first sexual experience with Anfisa).

- *awareness of temporality and mortality*. Mikulaj interprets his birth, the death of his mother, his father, his classmates and the calf. The death and mortality of the Another one gives meaning to specific social identities. "To be" for Mikulaj means as "to be" to the death, so "to be" to Another one. The semantic horizon of his existence is set through the events of the Another one and mortality.

“I’m not afraid of death. For the dying one, death is not terrible. It is terrible for those who remain. If, after me, no one remains, then there is nothing to fear!” [Gilyazov, 2019, p. 15].

Mikulaj himself dreams of dying with his eyes open to look at the world for a few more days: “I will be the happiest of the dead, because no one will be able to close my eyes, because there is not a single living person around me....” [Gilyazov, 2019, p. 10].

The chronotope of the hero memories consists of the emotional experience, uniting the whole kaleidoscope of events of national history: the fall of Kazan Khanate in 1552 (the coming of the Kryashens to Sarsaz Kul); the revolution of 1917 (the murder of the priest Father Philippe); the Great Patriotic war of 1941-1945; the Afghan war of 1979-1989 (the death of Arduk).

The story of the collapse of the Patriarchal civilization is given in the play through the antithesis of the Zhuravlevs – Portnovs Families.

Mikulaj reflects on the specific important situations in his own biography, and in the village life, country and the world in general. He constantly speaks because he is afraid to forget the human language.

The system of characters in the play is expanded through the introduction to the fabric of the narrative of other characters that come into life in the memories of the hero, immortalized in dolls. Dolls are transformed in the space of the work into a barometer of the moral health of their prototype.

At the end of the play, the hero dies of joy that the lake has returned to its former place and, therefore, the former villagers will soon return to live in their homeland. Here the symbolism of water as a symbol of life makes itself felt.

The second layer in the monodrama – is a conceptual one, where the characters turn into metaphor; and the village, losing the real features, turns into a model of human society. The main character is endowed by traits of the Demiurge, the Creator of things in a sensually perceived Space. The world of the hero is a heroic world where there is its own cult, which is timely lighting of a candle; where a religion of professional duty exists; and its rites and rituals and rules flourish. Here the will acts as a life-affirming force that allows the hero to overcome himself, to win the right to eternity. The concept of Will in the monodrama is intertwined with the concept of Life. Mansur Gilyazov glorifies not just the action as such, he captures the attention of readers on the creative nature of the protagonist’s actions (compare the rules of life in the families of Zhuravlevs and Portnovs)

Mikulaj is a hero who constantly fights against the darkness, he lights a candle as a landmark to pilots, flying at night above the village; he maintains the operating condition of electrical equipment in the hope that someday the light will be turned on in the village; he fights for the preservation of light in the soul.

Night, darkness in the monodrama is associated with death, with the animate uncontrollable element which is the creation of chaos. Victory over the darkness means the approval of man's power. The heart of the hero could not stand the joy for the return of the lake, but the highest justice was that in his open eyes, in which life was fading, the lamps of the switched-on street lamps began to reflect.

Summary

The play "Mikulaj" is a bright example of modern monodrama in the Tatar drama. The main character in the play experiences the process of self-determination in his own ego-history. Mikulaj confronted with himself as with Another one (past, present, future). In the Mansur Gilyazov's monodrama two content layers coexist: the real and the conceptual one. In the poetics of the play, a huge role is played by song leitmotifs, which makes an artistic parallel with the novel "Night flight" by Antoine Saint-Exupery

Conclusion

"Mikulaj" by Mansur Gilyazov, surely, can be called a creative success of the author.

Thanks

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在将俄语作为外语教学时实施剪辑思维原则

IMPLEMENTATION OF PRINCIPLES OF CLIP THINKING WHEN TEACHING RUSSIAN AS A FOREIGN LANGUAGE

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注解。 本文描述了如何使用俄语中的剪辑思维原理作为外语课程。 由于形成了对现代学生的新型思维,因此产生了这种需求。 有必要改变传统的教育和教学形式。 本文讨论了剪辑思维的特征,并提出了与之对应的任务类型。

关键词: 俄语作为外语, 剪辑, 剪辑思维, 概念思维, 个人思维风格

Annotation. *The article describes how to use the principles of clip thinking in Russian as a foreign language lessons. This need arose due to the formation of a new type of thinking of modern student. There is a need to change the traditional forms of education and teaching aids. This paper discusses the features of the clip thinking and suggests the types of tasks corresponding to it.*

Keywords: *Russian as a foreign language, clip, clip thinking, conceptual thinking, individual thinking styles*

The rapid pace of development of information technology has radically changed our lives. These changes affected the sphere of education. Many teachers note that modern students are not able to listen to lectures for a long time, consistently present any information, analyze, many of them have problems with memory. All this is explained by the fact that a new type of thinking, clip thinking, has replaced the conceptual thinking.

The appearance of clip thinking is not accidental, it is due to the following factors: (1) acceleration of the pace of life and increase in the volume of information flow: the need to isolate the main and filter the excess; (2) the need for greater relevance of information and the speed of its receipt; (3) increase in variety of incoming information; (4) an increase in the number of tasks in which one person is engaged simultaneously; (5) the growth of dialogism at different levels of the social system [4].

The traditional paradigm of education, with its inherent consistency, slow pace and thoughtful study of what was read, was unable to cope with the increased pace and volume of information falling on modern man. Therefore, teachers were faced with the task of revising educational material (lectures, textbooks, training tasks, etc.) and changing the format of its presentation. So, what is the characteristic of modern student clip thinking, and how to use it in the educational process?

The term "clip thinking" has not yet received its final definition, but it is widely used and explored in cultural studies, psychology and philosophy. In the domestic science for the first time it was used by F.I. Girenok [2].

As the researchers note, the clip thinking (from the English word *clip* "cutting, fragment, trim, cut") has its pros and cons. The disadvantages include: (1) fragmentation of the information flow; (2) the absence of semantic links of individual parts of the text / speech; (3) the lack of a holistic picture of the world; (4) loss of ability to synthesize and analyze, loss of independent thinking; (5) dependence on computer, telephone, etc. (6) problems with logical thinking [2,3].

The advantages of clip thinking include the ability to process large amount of information, highlight the main thing, cut off the superfluous. Clip thinking can help if you need to remember a large amount of unrelated information (for example, new words, phrases, numbers, etc.).

Thus, when developing various courses in Russian as a foreign language (lecture and practical), we outlined the following principles of presentation of the material, taking into account the peculiarities of students' clip thinking:

1. Fragmentation principle.

The training material (lecture, separate text) should be divided into small complete semantic segments. Dispensing information contributes to its better absorption. After each such part it is necessary to answer questions reflecting the main idea of the text.

2. Animation principle.

In this case, the principle of an illustrated dictionary is used when introducing a new vocabulary: a drawing with minimal commentary allows you to create the necessary video sequence for the formation of sociocultural competence among foreign students. It is better to show a picture than to explain what a *isba*, *taiga*, *samovar*, *caossack*, etc. are. The use of color when presenting new material is useful, it allows to systematize and structure new knowledge, for example, nouns are only blue, and verbs are red, etc.

3. Association principle.

The association allows to memorize more information when learning new words (*chastokol* – sharp, *druzhdina* – friend, *pushnina* – fluff, *zolotodobycha* – gold + mining, etc.).

4. Visualization principle.

The student is offered to reconstruct a fragment of people's life or an event on the basis of photographic documents, pictures, maps, etc.

An example of one of the tasks: Put on the "timeline" important moments from the life of your city / country or individual (*foundation of the city, the construction of a railway, the opening of a hospital and theater, etc.*).

On the final lesson, a mental map is offered to check learned knowledge in the form of a set of pictures that display important information about the topic covered. The student must restore the content of the text / topic. Studied words and expressions can serve as support.

Since of the minuses of the clip thinking are spoken more often than about its advantages, one should not forget that the student should be taught consistently and logically to present the obtained information, to be able to analyze and draw conclusions. Therefore, tasks for the development of these skills should be included in the learning process. An example would be a *problematic issue* that is offered to the student as thinking and participating in a discussion, as well as writing an *essay* that, among other things, develops the writing skills of a foreign student.

It should be noted that the complete rejection of the traditional form of education and the transition to a model built on the principles of clip thinking is not possible, because (1) there is such educational material that requires thoughtful study (for example, an analysis of grammatical rules and constructions); (2) students with different educational systems (writing tradition supporters or supporters of visualization) may end up in the same classroom; (3) in addition, cognitive thinking styles of students should be taken into account.

So, G.A. Berulava writes that for students with an integral style it is desirable to rely on learning technologies, apply the principle of ascent from the abstract to the concrete, from the general to the particular, rely on their own cognitive activity, use discussions. And for students with a differential style, the learning process is built from the particular to the general, it is based on the principles of holistic cognition or stepwise, sequential cognition [1].

As conclusions, it should be noted that

1. The revolution in the world of information technology has led to the emergence of a new type of thinking, focused primarily on the perception of the information flow and the speed of reaction to what is happening around us.

2. This led to a change in the type of thinking of modern man, in particular the student as a participant in the learning process.

3. This required the development of new approaches and forms in the educational paradigm.

4. Taking into account both positive and negative aspects of clip thinking, its principles should be implemented in the educational process, while not forgetting about the cultural affiliation of students, individual thinking styles of students and the nature of the educational material itself.

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Charlotte Brontë «Jane Eyre» 在小说教育话语中的咄咄逼人的词汇
**INVECTIVE VOCABULARY IN THE EDUCATIONAL DISCOURSE
IN THE NOVEL BY CHARLOTTE BRONTË «JANE EYRE»**

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注解。本文讨论了在英语女性教育话语中使用 *invective* 词典。这项研究是根据 S.勃朗特“简爱”的小说材料进行的。研究表明，XIX 的教育话语具有明显的独裁风格。因此，这种话语包含了许多与孩子相关的令人反感的，滥用的词汇。

关键词：教育话语，in 骂，分类，道德，人的尊严。

Annotation. *The article deals with the use of invective lexicon in the English-speaking women's educational discourse. The study is conducted on the material of the novel by S. Brontë "Jane Eyre". Studies have shown that educational discourse of XIX has a pronounced authoritarian style. Consequently, this discourse contains a lot of offensive, abusive vocabulary in relation to the child.*

Keywords: *educational discourse, invectives, classification, morality, human dignity.*

Invective vocabulary – is an insult vocabulary. The discourse containing invectives is considered as destructive, harmful to health, destroying a person and society as a whole. If invectives are frequent in people's speech and have penetrated into public speech, then such discourse is non-ecological. Invectives are the direct material for studying ecolinguistics. N.A.Srebryanskaya [Srebryanskaya, 2013] presents a number of features of injective vocabulary:

1. It is dynamic and evolves over time. The author cites the situation in the “Forsythe Saga” by J. Galsworthy, when Fleur Forsythe files a lawsuit on the grounds that she was called an upstart in private conversation. Today, no one reacts to the word upstart. The explanation may be a significant change in the criteria of morality and ethics, a decrease in sensitivity regarding swear words and dishonesty.

2. Invective for the addressee and the addresser is emotionally and emotively asymmetric. The addresser, while speaking, facilitates his emotional state, the addressee, on the contrary, experiences insult, humiliation, anger.

3. Very many words that are not expletives can become invective, being used adjectively with the intention of insulting and in the corresponding syntactic construction.

4. Insult can be intentional and unintentional, conscious and unconscious. In the latter case, we can talk about the complete asymmetry of emotions, which on the one hand can be expressed by the complete absence of such, on the other hand, a storm of emotions.

5. Unintentional and even unconscious insult can take place in cross-cultural communication when the speaker does not fully know all the meanings and connotations of the word, but uses it in his speech with foreign communicants [Srebryanskaya 2013, p. 142-143].

There is no doubt that educational discourse should not contain invectives. Nevertheless, it is well known that caregivers often use them to address the educated.

In our study material, we identified cases of insulting a child, however, very often the vocabulary, traditionally regarded as invective, is not used by the educator. In this regard, it is necessary to turn to the theory of invective and consider what discourse, phrases, phrases, words can be considered offensive and what not.

V.I. Zhelvis distinguishes between two types of invectives. Invective *social type* is used as an interjection under very low stress to enhance the emotionality of the utterance, fill a pause, etc. When a person is under intense stress, he uses the *stressful invective* and it is this injecti that contributes to “blowing off steam”, reducing the risk to the mental health of a person. Stressful invective is the most offensive and most negative for the interlocutor [Zhelvis. p.45].

V.I. Zelvis proposes the following classification of abusive vocabulary by topic::

1) Blasphemy: «*Jesus fucking Christ!*», «*Go to hell!*», «*God damn you!*», «*Goddam(n)!*», «*Hell!*»,

2) Scatologisms - invectives, which name products of human activity (feces, urine, saliva, nasal mucus, etc.): «*Shit!*», «*shit-faced*», «*Shitting hell!*», «*Cut the crap!*», «*Asshole!*», «*You old fart!*», «*Stop farting about!*»,

3) Zoovocatives and zoo comparisons, with which “the invectant accuses the opponent of the presence of a certain negative quality, which the national tradition attributes to a particular animal”: «*Pig!*», «*Son of a swine!*», «*Pig’s ass!*», «*Dog!*», «*Bitch!*», «*Son of a bitch!*», «*It goes to dogs!*».

4) Sexual invectives – are expressions related to the problems of the reproductive function of a person or animal. They are subdivided into:

a) Direct sexual invectives: «*Fuck you!*», «*Fucking fucker!*», «*Fuck off!*», «*What the fuck?*», «*Don’t fuck about!*», «*Motherfucker!*», «*Go fuck your mother!*», «*Jerk! Jerk off!*», «*Whank!*», «*Whack!*», «*Daisy!*», «*Gay!*», «*Pansy!*»,

b) Exposing Invectives – names of "shameful" body parts: «*Oh bollocks!*», «*Ass!*», «*Asshole!*», «*Kiss my ass!*»,

c) Invectives accusing of dubious origin with the meaning of "illegitimate": «*Bastard!*»,

5) Theme of blood in invective usage: «*Not bloody likely!*», «*One bloody man, one bloody vote!*», «*bloody backs*»

6) Xenophobic invectives - xenophobic nicknames and name calling: «*Negro*», «*Black*» [Jelvis, 2001].

Note that scientists do not include phytonyms in the list of insults. N.A. Srebryanskaya believes that phytonyms also deserve attention when analyzing offensive, abusive vocabulary [Srebryanskaya 2013].

In the educational discourse of the beginning of the XIX century, characterized by the authoritarian style, one can find a lot of insults. The orphan Jane Eyre is being regularly humiliated by her aunt Reed and cousin. The girl is constantly told that she is angry, feigned, a liar, a slob.

• *No; you are less than a servant, for you do nothing for your keep. There, sit down, and think over your wickedness.*

• *Troublesome, careless child! and what are you doing now? You look quite red, as if you had been about some mischief: what were you opening the window for?*

• *No sight so sad as that of a naughty child," he began, "especially a naughty little girl. Do you know where the wicked go after death? [Jane Eyre]*

In these examples, we do not find all the vocabulary mentioned in the above insult categories. However, there is no doubt that calling the child a wicked, naughty, careless, etc., humiliates her and causes heartache. We believe that the reason for the absence of insults from the categories of V.I. Zelvis [Zelvis 2001] and G.V. Kusova [Kusov 2004] is a great distance in time: in the XXI century, one is insulted in other words, rather than in the early nineteenth century. A change in the vocabulary of insults in time is the sign that N. A. Srebryanskaya spoke about [Srebryanskaya 2013]. In this regard, agreeing with N.A. Lukyanova about the stability of insults in that they single out and uniquely call "socially significant signs that seem to be a deviation from a certain social norm in the eyes of the society" [Lukyanova 1986], which, indeed, are intransient, we also share the point of view of N.A. Srebryanskaya that the vocabulary of insults is very changeable.

Nevertheless, in the following statements one feels well how the teacher wants to humiliate the child, to cause him heartache, to influence his feelings and consciousness. There are words that are intended to cause a child a sense of resentment and humiliation:

• *Jane, I don't like cavillers or questioners; besides, there is something truly forbidding in a child taking up her elders in that manner.*

Is it possible to consider the type of vocabulary such as *your wickedness, troublesome careless child, naughty little girl, the wicked, you have a wicked heart* to be invective, offensive?

In the explanatory dictionary of D.N. Ushakov, the concept of invective is interpreted as (from the Latin. *Invectivus* - abusive, vituperative) angry speech against someone, an offensive expression, abuse, attack [Ushakov]. In the statements of English educators of XIX there are no curse words. As for “abusive expressions”, it is necessary to refer to the above classifications of scientists.

A more accurate interpretation of the insult is given in the following definition: “The illocutive concept of “insult” – is a set of speech and tactical language means, describing a negative speech model of a person, opposite to the ethnosocial ideal, presented as a role model in linguistic culture” [Kusov, 2004, p.37]. When insulted, person's social image is being distorted. And this, in turn, can cause moral damage to feelings, because it damages the image, damages the social portrait and leads to the loss of previous social significance in the eyes of the society, from which a person requires social recognition [ibid, p.17].

This definition of insult suggests that expressions used in the address of Jane Eyre are offensive, because “they damage the image, spoil the social portrait and lead to the loss <...> of social importance in the eyes of society, from which a person requires social recognition”. Indeed, such expressions spoken in the presence of other children, as *your wickedness, troublesome careless child, naughty little girl, the wicked, you have a wicked heart, I told you not to go near her, you little brute, a fool warmint, you are one of the most bare-facedest, you little wretch, you little un-grate-ful, mur-de-rous, hor-rid villain, you young rascal, you little ungrateful wretch, you villain* do reject the child from the children's team, make her an outcast in the children's environment. Note that almost all of them are used with the pronoun *you*, which greatly enhances their impact.

3. Wendler singled out a class of lexical units with a strong pragmatic aspect through verbs of etiquette behavior, which are of two types: 1) scold; berate; nag; upbraid ; 2) scoff ; mock; taunt, gibe; jeer ; belittle; flatter [Wendler 1985, p. 247]. Such verbs contain an indication of the “wrong” behavior of the addressee. The verbs of the second group have it more deeply: using these words, the addresser tries not only to humiliate, insult, offend, ridicule, but also undeservedly accuses the addressee of non-existent sins and misdemeanors. Note the pronounced negative connotations of these verbs. These verbs are usually not used in 1 person, they are directly related to insults, since they name the action carried out by insults.

Thus, there are insults. They are spoken directly with aggression and threat. There is not only humiliation, but also intimidation of the child. These are direct insults, because there is a “facial characteristic expressed in a sharply negative form with the help of <...> sharply negative vocabulary” (*you have a wicked heart*); insult is achieved by using “a direct negative nomination of the subject of an insult or by its knowingly false accusation of criminal or amoral”.

She is not worthy of notice; I do not choose that either you or your sisters should associate with her.

And you ought not to think yourself on an equality with the Misses Reed and Master Reed. They will have a great deal of money, and you will have none: it is your place to be humble, and to try to make yourself agreeable to them.

For shame! for shame!

What shocking conduct, Miss Eyre.

Hardened girl! Nothing can correct you of your slatternly habits.

How dare you affirm that, Jane Eyre?

You have a wicked heart; and you must pray to God to change it: to give you a new and clean one: to take away your heart of stone and give you a heart of flesh

No sight so sad as that of a naughty child.”

Troublesome, careless child! [Jane Eyre]

Analysis of the material suggests that the educational discourse of the XIX century contains insults in direct and hidden form. The teacher's speech very often contains lexemes that demean the dignity of a person and reduce his social status. Almost all of them are negative human characteristics: *wretch, villain, rascal, warmint, a fool, brute etc.* In addition, the child's actions, deeds, words, habits and manners are also negatively evaluated by the caregiver: *shocking conduct, hardened girl, slatternly habits, wicked heart, your heart of stone, a naughty child, troublesome, careless child, you little brute, naughty boy etc.* In all cases, the “characteristic of a person expressed in a sharply negative form with the help of sharply reduced, sharply negative vocabulary” is given, at the same time “an insult is achieved by using a direct negative nomination of the subject of an insult or by knowingly falsely accusing it”, which is an insult. The offensive nature of invective lexemes is expressed in the humiliation of the child, threats of physical and mental punishment. Almost all of them are used with the pronoun *you*, which greatly enhances their impact.

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关于通过历史记忆的棱镜的爱国主义
**ABOUT PATRIOTISM THROUGH THE PRISM
OF HISTORICAL MEMORY**

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注解。 本文试图从跨学科方法的角度理解对历史记忆的理解。 考虑到当前俄罗斯发展起来的社会心理和文化状况,分析了历史记忆与爱国主义的关系。 这项工作说,爱国主义的各种解释尽管具有明显的自然性和永恒性,但却为陈规定型的奇异结构的出现创造了先决条件。 值得注意的是,爱国拜物教的新形式是教育机构,简化为“服务”的逻辑 - 提供教育服务,根据国家概述的一系列价值观和优先事项建立。

关键词: 历史记忆, 历史意识, 集体记忆, 虚假记忆, 怀旧爱国主义, 国家爱国主义。

***Annotation.** The article attempts to make sense of the understanding of historical memory from the standpoint of an interdisciplinary approach. The relationship of historical memory and patriotism is analyzed taking into account the socio-psychological and cultural situation that has developed in Russia at the present time. The work says, that various interpretations of patriotism, despite its apparent naturalness and eternity, create prerequisites for the emergence of stereotyped chimerical constructions. It is noted that the new form of patriotic fetishism is the institution of education, reduced to the logic of "service" - to the provision of educational services, built in accordance with a given vertical of values and priorities outlined by the state.*

***Keywords:** historical memory, historical consciousness, collective memory, false memory, nostalgic patriotism, state patriotism.*

The growing interest in the problem of patriotism, as a rule, is characteristic of a society that is going through a transitional stage in its development. As a result, in such a society there is an urgent need to search for lost meanings, to comprehend traditions, common experience, shared by people, which is fixed and preserved in its historical memory.

This paper attempts to clarify the already established views on the problem of patriotism. The problem of understanding the essence and existence of the phenomenon of patriotism cannot be resolved, and even correctly set and realized outside the diverse cultural context of this phenomenon. The framework of this context can be described in terms of historical and collective memory associated with it. To understand the nature and logic of patriotism, it is extremely important to reveal the content of historical memory. Domestic researcher Potemkina M.N. defines historical memory as “a set of value orientations and actions undertaken by society, according to the symbolic reconstruction of the past in the present” [11, p. 53]. In this definition, historical memory is considered only in the light of the value structure and activity of society, as a result of which we have polysemantic memorial complexes. A. Etkind adheres to a different point of view, describing historical memory as “a living, eclectic, unstructured set of symbols and opinions. All of them are perceived simultaneously, responding to different political needs and cultural aspirations” [18, p. 263]. In this definition, the author produces a different approach — a turbid stream of consciousness, unstable depths, and sudden whirlpools. It is rather a phenomenon opposite to historical memory. Another domestic researcher, J.T. Toshchenko, analyzing the essence of historical memory, notes that “... this is a focused in a certain way consciousness, which reflects the special significance and relevance of information about the past in close connection with the present and the future. Historical memory in essence is an expression of the process of organizing, preserving and reproducing the past experience of a nation, country, state for its possible use in people’s activities or for return of its influence to the sphere of public consciousness” [13]. As you can see, here is reflected the traditional Marxist method of research, in the application of which historical memory becomes the organizer of the practice of the functioning of historical knowledge.

An integral part and the basis of the practical functioning of historical memory is historical consciousness. Note that the peculiarity of the historical consciousness is that it “... easily changes its characteristics under the influence of the media, socio-economic processes, policy priorities ...” [17, p. 165].

Corresponding, correlating and interpenetrating concept is collective memory, which is a cultural phenomenon of social consciousness, which is based on generally accepted values, stereotypical images of the past and present, its symbols and subconscious complexes. The relationship between concepts is expressed in the fact that historical memory can be distorted by collective memory (its generally accepted values come into conflict with the reconstruction of the past) and vice versa. The Jewish historian Amos Funkenstein, describing the collective memory, notes: “... it is superficial and careless in relation to chronology; and it is completely topocentric, i.e. tied to "its" place. For the collective memory of the past, people, events and his-

torical institutions serve only as prototypes, and their uniqueness is not recognized. They are only threads linking the present with a continuous past" [14, p. 22]. The French author - a classic in studying historical and collective memory, Maurice Halbwax, making these two concepts apart, notes their deep difference, which consists in the fact that "collective memory differs from history in at least two respects. This is a continuous train of thoughts and there is nothing artificial in its continuity, since such memory only retains from the past that is still lives or is able to live in the consciousness of the group that supports it. It, by definition, does not extend beyond this group" [15, p. 22]. And further: "Collective memory, on the contrary, is a group viewed from the inside, and for a period that does not exceed the average human life span, and very often for a much shorter time" [15, p. 27].

The essential aspect of the historical memory of society is not only sensual, emotional perception in past assessment, but also the semantic, rationally organized content of the imprinted events and perceptions that society experiences together and simultaneously. Therefore, when political leaders talk about the events of the past, then, as a rule, they consciously exploit the feelings and emotions of people, not trying to help society get into the essence of events that remain not fully understood. As a result, the tragic mistakes of the past and the unsolved problems of the present continue to be in their tormentingly inextricable connection. As G.S. Shirokalova rightly points out: "there are "flaws of doubt" in the public consciousness left by the destructive rhetoric of the late 1980s - early 1990s" [17, p. 162]. Unresolved "flaws of doubt" of historical and collective memory inevitably give rise to impulses in the present, misleading, since, according to F. Nietzsche, the past "... is in danger of undergoing some distortion, embellishment and because of this convergence with free fiction..." [9, p. 172]. Hence, heightened expectations, false optimism, illusions that directly cause nostalgic patriotism, the source of which is emotional - sensory perception of the past, which through the prism of illusory perception of the world is one-sided and straightforward, divides historical events into "good and bad", which allows us to speak about selectivity of historical memory. It is emotions that, because of their totality, become the trigger for the emergence of nostalgic patriotism.

Another source of nostalgic patriotism is everyday life of people. Factors and manifestations of everyday life, accompanied by critical life events, we do not consider as an indisputable basis. Events and the background of everyday life, focused on the joint experience of people, emotions give the source material for the analysis of its role in the formation of the outline of nostalgic patriotism. In addition, the state of uncertainty in everyday affairs, associated with a low material standard of life, forces the average man to cling with all his might to any patriotic idea in which the average person sees for himself the source of strength that he can hold on to. As you know, "dissatisfied people always respond to the call of the mass movement, because they see it as a rescue from everything that torments them" [16, p. 145].

Another characteristic source of formation of nostalgic patriotism is the spiritual and moral atmosphere of society. The spiritual and moral atmosphere is undoubtedly a deeper level compared to the material sphere of society, since it is the first that feeds the titanic will of the state, which determines the material successes of society. The failure of the moral core undermines all other state successes, including in the material sphere. The indicated source can be absolutized, having presented not as one of the reasons in a wide palette of explanations, but as the only one.

Meanwhile, the state of modern Russian society, which is accompanied by an increase in social inequality, disregard of social justice, disintegration and disunity of social communities, a frustrating background of people's tensions and numerous fluctuations, individual consciousness is strongly and aggressively affected by the media, what allows to significantly increase broadcasting of given patterns of patriotism, built on indefinite social ideals. As A.I. Yuriev rightly indicates: "All information created in the media and in political publications is intended only for the emotional sphere of a person, taking into account the patterns of perception, memory, attention, moods, emotions" [19, p. 422]. Note, that the level of modern propaganda allows to confidently translate the phenomena of social consciousness from the form of the Brownian movement into the right direction, for example, through the creation of "Overton windows".

Note that at the present stage of development of society, in which there is a painful change in the basic psycho-type, the process of "patriotification" receives priority, based both on manipulative and speculative actions by the state (heroization of the country's past through concealment of "skeletons in the closet", anti-American and anti-European rhetoric of pro-government media), which does not distinguish facts from illusions, and on the gradual drawing of representatives of all generations into the conscious construction of a system-strengthening solidarity. We are inclined to assume that any attempts by the state to impose one or another type of patriotism on society is always a violence against a person. As a result, violence places one in a simulacrum of patriotism, in an artificially created matrix formation with given and immutable characteristics. As a result, patriotism turns into an imitation of patriotism.

Another important source of nostalgic patriotism is our collective unconscious, our archetypes, which manifest themselves in everyone, but in different ways. At the end of the characteristics of nostalgic patriotism, let us quote the French sociologist Jean Baudrillard who noted that "when the real is no longer what it was, nostalgia appropriates all its semantic content" [3, p. 16].

Another view is ideological patriotism. We denote only a few positions that seem especially important in it: it is the transfer of accents from people's interests to the interests of the government (state) and their extradition for the interests of the people; development of pseudo social solidarity - "we are together";

widespread use and exploitation of state and administrative resources, including controlled media; using the old dilemma: faith - knowledge in favor of imposing patriotic beliefs, not knowledge (“patriotism is above the knowledge”); real social information emanating from all sources is regularly replaced by a source of social creativity - patriotism; use of linguistic mimicry, changing the usual and euphonic concepts, such as people, order, discipline, power. In any case, state patriotism charms with its power to simplify everyday life, pushes people to stereotypical thinking, standardizes values and, which is important - creates illusions due to which events in the social life of individuals and social groups acquire signs of reality. As J. Baudrillard points out: “Everything that happens is annihilated on a television screen” [3, p. 285]. So, ideological patriotism, in our opinion, is given by the relationship of need and situation, at the same time it is a source of patriotic romanticism with which all new generations can be led in any direction. It makes sense to note that state patriotism has now become an objective factor determining the socio-political situation in the country. Ultimately, today, an attempt has been made to impose a mobilization model of development on society through patriotism, which liberates the nationalist instinct. At the same time, the logic of the political elite transcendently reflects the needs of a part of society that wants to be tightly buttoned into an army jacket. The peculiarity of this moment is in an attempt to bring society under total control through the transition from state patriotism to its new model - military-mobilization patriotism. We are inclined to believe that various interpretations of patriotism create prerequisites for the emergence of stereotyped chimerical constructions. Denial of patriotism, as well as its deification, are two unacceptable extremes. They manifest two sides of the fetishistic consciousness - the denial and restoration of a certain idol, which for a long time remained an integral feature of Soviet reality. The denial of patriotism is the overthrow of a historical personality that has developed in a centuries-old culture, restoration means the absolutization of a stiffened mask, lifeless guise. Today it seems that the fetishization of patriotism comes down to compensating of loss of the real, to show the real through the imaginary. A new form of patriotic fetishism is the institution of education, reduced to the logic of "service" - to the provision of educational services, built in accordance with a given vertical of values and priorities outlined by the state. The country's modern experience makes one think about how to avoid turning patriotism into a fetish, for the sake of which questions and problems of the current state of society are being discarded.

On the contrary, the semantic or rational - organized content of historical memory is built in accordance with the demand for it - individual, collective and national. Perhaps the inability to comprehend the historical process became the reason that when "... we began to learn the true history of the country, it turned out to be so terrible that most of the society hurried to forget about it at the first

opportunity" [6]. Speaking of oblivion, let us quote G. Baudrillard, who says: "Oblivion about destruction is part of destruction, because it is also the destruction of memory, history, society, etc." [3, p. 95]. And then he notes: "... this oblivion is still very dangerous, it must be erased with the help of artificial memory (today, artificial memories are everywhere, erasing people's memories ...)" [3, p. 95]. This indicates that a person who is included in the flow of events in history is not able to objectively and fully understand its semantic content. At the same time, it should be noted that the historical memory in the human world "... creates the feeling that some things can no longer be repeated. But events recede further and further, and it becomes increasingly difficult to remember" [10]. It is obvious that the glut of the epoch (public consciousness) with history, which is accompanied by the state of "continuous overexcitement of our historical consciousness" [4, p.44] leads the cognitive subject to a temporary shutdown from the flow of events, which is no longer decisive for his life. Within the framework of

ones rationally organized memory, "patriotic education" comes to the fore. This education should not be communist or monarchical. It should be as depoliticized as possible" [7, p. 211], - rightly indicates V.V. Zapariy.

Unlike history, which is an irreversible process, historical memory, on the contrary, is reversible and fictional, especially in the conditions of a crisis of historical knowledge (not to be confused with historical science), it is corrected with every minute of a lived life. It always changes Its background color, combining tragic and comical in the same moment. In addition, it is based on the principle of dualism, in which the real historical process is reflected in the heads of people, a reflection of its image. But let us return to the crisis of historical knowledge, which is caused by the transition from the uniformity of traditional history schemes to the vision of a historical process based on a variety of interpretations of its various aspects and non-traditional paradigms (psychoanalytic, anthropological, cultural, structural) interpretations of historical space. It is important to clarify that this plurality of paradigms cannot interpret the meaning of historical events. As indicated by H.-G. Gadamer: "Psychological interpretation ... constitutes only a subordinate moment of historical understanding, and this is not only due to the fact that it really does not achieve its goal" [4, p. 262].

The key forms of memory are literary works (historical novels) that do not pretend to the truth, but in which "... something irreplaceable in its significance is preserved, even if it is not yet understood at the moment" [2, p. 120]. In the process of accessing available historical evidence, "collective memory changes interpretations, selectively emphasizing, suppressing or refining various aspects of this evidence" [8, p. 194]. Note that the information contained in the memoir literature, allows to identify the point of bifurcation in the process of development of society. It is impossible to deny that history, which is not composed of immu-

table categories, being built into the educational system, listening to the instinct of power involves the individual in the illusory space of likelihood and myth-making. As a result, historical memory acquires an imaginary character, directing the transmission of cultural patterns of behavior. In the illusory space, the imagination obscures the real, and the consciousness of the individual turns into the consciousness of the viewer, who believes that those images (usually clichéd) that are offered to him actually are reality. Therefore, the imaginary historical memory, which is biased in nature and is not objective from the point of view of the search for truth, can be considered as something that does not exist. The imaginary historical memory is built on the so-called factor of discrepancy between the event series of the past and its reflection in the public consciousness. Therefore, it is not by chance that, as a rule, descendants of victims of repressions of the totalitarian regime differently assess the experience of their ancestors, which must be perceived as an unfavorable and inevitable reality of historical memory, despite the fact that Jack Goody rightly points out: “Everyone sees the world with his own eyes and not by strangers” [5, p. 27]. The discrepancy factor inevitably causes discord, a contradiction between the inner world of the individual and the dress mask of a modern educated person who suffers and at the same time is burdened by “highly developed self-conceit” (F. Nietzsche's term) and became the bearer of a kind of illusion of “objectivity”. On the contrary, the real historical memory is a reality in itself, it has its own language and speaks with us on its own language.

The priority channel for the transfer, processing and assimilation of historical memory is the institute of education. In modern society, the institute of education is traditionally built on a class-lesson system in schools or a lecture and seminar in universities. In this framework, rational ways of understanding and comprehension of the past are weak, it is poorly perceived by the young generation with well-developed intellect, it is boring for them. As a result, “the youth, in the words of F. Nietzsche, is, as it were, driven through the structure of the centuries” [9, p. 202], the history of the epochs, cultures and customs of humanity, turning the individual into a “stamped” personality. Indeed, students do not respond equally to historical events. As Mark Block rightly points out: “sensitivity to the events of the present is very different depending on differences in temper...” [1, p. 105]. Temperament is not the only factor that causes interest in the past. A national institute of education, built on the principles of the Bologna process, raises people who are poorly developed. It also does not relieve them from the danger of ignorance, which is a source of civil silence. As a result, the unsolvable problem of the motivation of the strong and the weak arises here. Note that not everything in the educational process comes down to motivation, but everything is saturated with it. Of course, motivation is becoming a complicating factor for the teacher, sharply raising the question - how to motivate and who. As indicates S.L. Rubinstein: “The teacher’s

essential task is to find the most appropriate motive for the student at each stage of development, transforming and rethinking the task that he sets for them, respectively” [12, p. 500].

The school where the first encounter with history takes place, including the highest one, translates the boundaries between the truth, the claims to which are flowing, in connection with the problems of the present and its myths (which for some time turn out to be more important than reality), which society continues to believe in representations of the past. Thoroughly mixes them with facts, fixing their changing boundaries. As a result, there is a movement of truth through the space of memory, which inevitably leads to new interpretations of well-known facts.

So, to summarize: in essence, the foregoing is enough to say that patriotism, caused by a complex set of factors, politicizes the political feelings of social groups, no matter how far they were from it before. However, in practice, patriotism is no more than a mean of mobilizing society of economically backward country, and at the same time, the national backwardness of which can be an incentive for its development. The dialectic of the interaction of historical memory and the educational space of modern Russia, faced with the protracted transition of historical discourse from uniformity to a variety of interpretations, generates a curved figurativeness of the past, which is combined with its reproduction in altered or transformed forms in the present. Appeal to history provides an opportunity to comprehend its meaning, which lies in the basis of the life of society. Historical memory can not be ignored in solving the political and ethnosocial problems of our time.

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冠状动脉和多支血管病变患者冠状动脉支架置入冠状动脉支架术后ST段抬高急性冠状动脉综合征临床依赖性动脉支架置入术的疗效

**EFFICACY OF CABG AND STENTING OF CORONARY ARTERIES
IN PATIENTS WITH CORONARY HEART DISEASE AND
MULTIVESSEL LESION WITH PRIOR STENTING OF CLINICAL-
DEPENDENT ARTERY FOR ACUTE CORONARY SYNDROME
WITH ST-SEGMENT ELEVATION**

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抽象。除了心肌梗塞的频率外，已经确定了一组临床，人口统计学和手术特征，这在冠状动脉旁路移植术中更为常见。在冠状动脉支架置入组中，重复血运重建和MACCE的频率显著较高。

关键词：急性冠状动脉综合征，冠心病，冠状动脉旁路移植术，经皮冠状动脉介入治疗。

Abstract. *Groups of clinical, demographic and operational characteristics have been identified, with the exception of the frequency of myocardial infarction, which is significantly more common in the group of coronary artery bypass grafting. The frequency of repeat revascularization and MACCE were significantly higher in the group of coronary artery stenting.*

Keywords: *acute coronary syndrome, coronary heart disease, coronary artery bypass grafting, percutaneous coronary intervention.*

Percutaneous coronary intervention (PCI) is the most frequent method most coronary revascularization. Number of PCI procedures performed increases exponentially throughout the world [1].

A large proportion of coronary artery bypass grafting (CABG) is performed in patients with recurrent symptoms after a previously successful PCI performed for acute coronary syndrome (ACS). Indications for CABG are the most common progression of the atherosclerotic process, restenosing process after PCI, severe coronary lesions. An increasing number of patients with previously performed PCI leads to an increase in the number of CABG performed after PCI [2].

There are very few studies comparing CABG and PCI in patients after successful PCI of clinically dependent artery (CDA) [3].

Objective: to analyze the two-year results of observations of 2 groups of patients who initially successfully performed PCI CDA using stents of the 3rd generation with drug coating, and then performed complete functional myocardial revascularization by CABG or PCI also using stents of the 3rd generation with drug coating.

Materials and methods. The general sample was equal to 110 patients with coronary artery disease and multivessel coronary artery disease the coronary arteries who were performed stenting of the CDA regarding the ACS with ST-segment elevation, and subsequently a complete functional revascularization CABG (CABG group) or PCI using stents with 3 generations of drug-eluting and biodegradable polymer not later than 90 days from the date of completion of the first phase.

For endovascular revascularization as the CDA, and the complete revascularization in all patients was used stents 3-generation drug-eluting and sirolimus bioresorbable polymer "CALYPSO" producer "Angioline", Russia.

The diameter of the implanted stents was equal to the distal reference diameter of the coronary artery, the length was calculated based on the need to overlap the portion of the artery not less than 5 mm distal from the edge of the atherosclerotic plaque in both directions.

The criteria for a successful PCI: a TIMI III flow, residual stenosis less than 10%, the disappearance of objective and subjective symptoms of acute myocardial ischemia after the intervention, and was successful in 100% of cases in both groups.

Before performing PCI, patients received a loading dose of clopidogrel, acetylsalicylic acid, clopidogrel, beta-blockers, statins and angiotensin-converting enzyme inhibitors were also prescribed.

CABG was performed using the same methodology mapping lymph node of the shunt to the anterior descending artery and venous bypass grafts to other arteries when indicated in conditions of artificial blood circulation, normothermia, cold blood cardioplegia.

The main group (CABG group) consisted of 47 patients who underwent complete myocardial revascularization by CABG.

63 patients were included in the control (group of PCI), which revascularization of the coronary bed was carried out by PCI.

Exclusion criteria: age less than 18 and more than 80 years previously implanted coronary stents or CABG, a lack of commitment to drug therapy, contraindications to the ingestion of antiplatelet agents, cancer, diseases of the blood system, chronic renal failure, ejection fraction of left ventricle less than 30%, the presence of pathology requiring operative treatment, the inability to perform complete functional revascularization, severity of lesions of coronary vessels by Syntax score less than 22 points and more than 33 points, the defeat of the left main coronary artery.

Patients of both groups were followed up after complete revascularization on a quarterly basis on an outpatient basis for 2 years. The end points of observation in both groups were cardiovascular mortality, myocardial infarction, acute cerebrovascular accident, re-revascularization and MACCE.

STATISTICA version 13.3 (TIBCO SoftwareInc) was used for statistical processing., 2017, <http://statistica.io>). The results are presented as mean and standard deviation (M \pm SD) at normal distribution, median with interquartile range of 25% and 75% percentiles at asymmetric distribution. The type of distribution of quantitative variables was evaluated by the Kolmogorov – Smirnov criterion with Lillifors correction. When comparing quantitative data, the Mann – Whitney U – test with continuity correction was used. Two-sided Fisher criterion was used to compare qualitative variables. The ratio of the chances of the development of large vascular events and the return of the angina clinic was calculated by four-field tables. Statistically significant differences between the groups were considered at $p < 0.05$.

Results. There were no statistically significant differences between the groups in clinical, demographic and operational characteristics (table. 1, table. 2), in addition to the frequency of myocardial infarction in history more common in the CABG group.

Table 1. Clinical characteristics of patients

Indicator	Group CABG (n = 47)	Group PCI (n = 63)	P
Age, years	59,2 \pm	59,6 \pm	0,92
Body mass index	29,1 \pm	29,9 \pm	0,4
Female sex, n (%)	5 (10,7%)	12 (19,1%)	0,46
Hyperlipidemia, n (%)	46 (98%)	62 (98,4%)	1,0
Arterial hypertension, n (%)	47 (100%)	63 (100%)	1,0
Diabetes mellitus, n (%)	8 (17%)	16 (25,4%)	0,36
Smoking, n (%)	14 (30%)	27 (42,9%)	0,17
A history of myocardial infarction, n (%)	15 (32%)	6 (9,5%)	0,006
Acute cerebrovascular accident in history, n (%)	4 (8,5%)	4 (6,4%)	0,71
Angina of the III-IV functional class according to the classification of the Canadian Heart Society, n (%)	46 (98%)	63 (100%)	1,0
Heart failure III-IV functional class according to NYHA classification, n (%)	10 (21,3%)	20 (31,8%)	0,28
Left ventricular ejection fraction after stenting of a clinically dependent artery,%	57,8 \pm	54,89	0,12
Euroscore II, points	1,43 \pm	1,420,6	0,44

Table 2. *Angiographic and operational patient characteristics*

Indicator	Group CABG (n = 47)	Group PCI (n = 63)	P
Localization of clinically dependent artery, n (%)			
Anterior descending artery	18 (38,3%)	25 (39,7%)	1,0
Circumflex artery	11 (23,4%)	11 (17,5%)	0,48
Right coronary artery	18 (38,3%)	27 (42,9%)	0,70
The severity of the lesion of the coronary bed on the SYNTAX scale, points	28±	27,32,7	0,21
The average number of implanted stents in a clinically-dependent artery, n (%)	1,17±	1,11±	0,72
The average length of the stented area in the clinically dependent artery, mm	26,2±	25,610,8	0,58
The average diameter of stents implanted into clinic-dependent artery, mm	3,1±	3,04±	0,32

The time differences of the time to perform PCI CDA complete revascularization between groups CABG and showed no PCI was - 63 [51; 82] and 75 [49; 85], respectively (p = 0,44). Frequency and revascularization events MACCE higher in the PCI (Table. 3).

Table 3. *The results of the study*

Indicator	Group CABG (n = 47)	Group PCI (n = 63)	P
Cardiovascular mortality, n (%)	0	1 (1,6%)	1,0
Nonfatal myocardial infarction, n (%)	1 (2,1%)	2 (3,2%)	1,0
Nonfatal acute cerebrovascular accident, n (%)	0	0	1,0
Repeated revascularization, n (%)	0	6 (9,5%)	<0,05
Return of the clinic of angina pectoris that does not require re-revascularization (not heavier than Class II according to the classification of the Canadian Heart Society, n (%))	0	1 (1,6%)	1,0
MACCE, n (%)	1 (2,1%)	9 (14,3%)	0,042

Discussion. The largest study comparing CABG and PCI outcomes in patients with coronary artery disease, including acute coronary syndrome, is a research SYNTAX [4]. It did not show the advantages of CABG or PCI for major cardiovascular events, including in the groups with intermediate severity of coronary lesions by SYNTAX Score [5]. The results of our study are consistent with the results of SYNTAX.

The differences between the CABG and PCI, carried out after a successful PCI of the infarct-related artery on the ACS with ST-segment elevation is practically not been studied [6]. There is evidence of a negative effect of PCI on the results of subsequent CABG: have a higher mortality [7], the incidence of myocardial infarction [12], revascularization [8] and MACCE [9].

The conclusion that the PCI impairs subsequent CABG results in the incidence of major vascular events in the early period, but has no effect on these indicators in the long term, and was made in a large meta-analysis [10]. In all these studies, when the PCI used bare metal stents or stents with a drug coating 1 generation.

CABG results with previous PCI in the application of stents with drug-coated 2nd generation are not inferior to the results of emergency CABG but repeated revascularization, which corresponds to the results of our study [11].

Conclusion

In patients with coronary artery disease and multivascular lesions of the coronary bed, with intermediate severity of lesions on the scale of SYNTAX, which were previously implanted stents 3 generation drug-coated in the clinical-dependent artery for acute coronary syndrome with ST segment elevation, CABG has no advantages over PCI in terms of cardiovascular mortality, myocardial infarction, acute cerebral circulation disorders, the frequency of return of angina, but wins in the frequency of repeated revascularization and events MACCE.

The authors state that there is no conflict of interest.

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外科医生情绪变化的心理特点和原因
**PSYCHOLOGICAL PECULIARITIES AND CAUSES
OF EMOTIONAL CHANGES IN SURGEONS**

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注解。 这项工作的目的是研究外科医生情绪变化的特征和原因。 科学新颖性在于对外科医生的职业倦怠综合征结构进行了全面研究。

关键词: 专业变形, 外科医生, 医生, 情绪倦怠。

Annotation. *The purpose of this work is to study the characteristics and causes of emotional changes in surgeons. The scientific novelty lies in the fact that a comprehensive study of the structure of the professional burnout syndrome among surgeons has been conducted.*

Keywords: *professional deformation, surgeon, doctor, emotional burnout.*

The choice of profession in modern life is based on the decisions made, weighted and deliberate. The choice of the surgeon's profession is a more deliberate step, carrying a long-term perspective and requiring commitment.

Surgeons are not only committed to their work, but are more fully immersed in the process, and often cannot abstract from it in everyday life [6].

Professional deformation is the change in the quality of life of the doctor, which is manifested as a result of many years of professional activity. On the shoulders of the medical staff, especially the surgeon, lies enormous responsibility for the lives of patients. Often, through the efforts and professionalism of the surgeon, it is possible to save the patient on the verge of death.

Factors such as suffering, pain, anxiety of patients leave an imprint on the psychological state of the physician, and, as a result, personality deformation occurs [1].

As practice shows, since the beginning of the activity, the young surgeon tries to empathize with the patients as much as possible about their problems. He assumes increased responsibility for his actions, as he is not yet fully confident in his own professionalism [7].

Further, under the influence of certain qualities of the surgeon's personality, various deformations begin to appear. For example, a doctor may overly immerse himself in a patient's problem, or, on the contrary, treat a patient as a material. With excessive focusing on the disease, the specialist may miss the deterioration in the emotional state of the patient. All this leads to frequent medical errors.

Of course, the doctor must develop a certain resistance to the problems of patients in the course of his professional activity, but he also should not lose the qualities characteristic of an empathic person and professional [8].

For the profession of a surgeon, a state of authoritarianism is often characteristic, which is expressed in excessive arrogance, aversion of criticism, straightness.

Professional burnout syndrome can manifest itself in the form of emotional exhaustion, a decrease in self-esteem, and an understatement of one's professional qualities. As a result, attitudes towards patients change, they are perceived as a source of heightened stress, the perpetrators of all problems [6].

Burnout can also manifest itself in the form of cynical statements towards patients, sometimes it can be hostility, as a result, the doctor-patient professional communication begins to be lost, humanity towards the patient disappear [2].

Many authors emphasize in their works that professional deformation does not manifest itself immediately, sometimes it proceeds covertly, latently for decades, so it is not so easy to identify it right away.

The problem of the influence of occupational stress on the state of working surgeons over the past decades has been the focus of attention of specialists in various medical specialties [8].

For a more detailed understanding of the picture of professional burnout of surgeons, it is necessary to understand the causes of short-term and long-term stress.

Thus, it is considered that the manifestation of occupational stress is characterized by the influence of factors that are associated with the conditions of professional activity. Many authors clarify that the deformation may occur when the external environment is perceived by a specialist as the emergence of a requirement that may pose a threat to his abilities and resources [9].

When human exposure is short-lived, various symptoms of stress are clearly manifested. Short-term stress is a dramatic use of "surface" adaptation forces, but with it, deeper mobilization occurs.

In the case when the "surface" reserves are too low for an adequate response to external stimuli, and the "deep" mobilization speed is too small to replenish the reserves, the person will not survive and die, and the internal reserves will not be spent [10].

Continuous stress is motivated by the mobilization and exhaustion of the “surface” as well as the “deep” reserves of the body. The specificity of various stress states depends not only on external influence, but also on the purpose of the activity, assessment of the situation in which it is located.

Many scientists agree that the classification proposed by V.I. Medvedev is the most complete and characteristic of the current stage of understanding the mechanisms of stress. It quite clearly reflects external stress factors, which are evaluated as primary sources of tension and overstrain, as well as internal personal factors that mediate the influence of the former and determine the features of psychological reflection and assessment of the situation [1].

According to the characteristics of V.I. Medvedev, extreme stimuli are extreme values of those factors of the situation that form the optimal background for the activity or in any case do not cause a feeling of discomfort. However, the assessment (feeling) of the limit at which these elements, when shifted to extreme values, become “critical,” is a purely subjective, individual value [2].

It is worth emphasizing that in the work of the surgeon, the factors of the appearance of stress are interrelated with the extreme influences of the work process itself and the organizational, social, environmental and technical features of the professional activity.

Thus, the emergence of stress in the surgeon is necessarily associated not only with his workflow, but also with events from his personal life, with different areas of his communication. In this regard, studies of the causes of deforming stress should be carried out taking into account various events, not only professional ones [5].

In 1978, T.A. Beehr and J.S. Newman identified 37 work or organizational factors that may be a stressor. They were divided into four categories:

- a) work requirements and task factors;
- b) requirements or expectations;
- c) organizational requirements or expectations;
- d) external requirements or factors.

Consequently, the concept of occupational stress as a complex phenomenon, which is expressed in psychosomatic reactions to various situations in the professional field of a surgeon, remains generally accepted by many authors [7].

In this case, under occupational stress, violations of psycho-physiological adaptation are expressed in a decrease in the efficiency of the working process, and in the disorder of personal contacts at work and at home.

In the 80s of the 20th century, when different scientific approaches to the issue of professional burnout were diluted with scientific models of its research, a new stage in the study of the phenomenon of occupational stress emerged.

The creation of methods for detecting burnout, in particular the Maslach Burnout Inventory (MBI) method developed by S. Maslach and Jackson (1981), allowed scientists to identify more basic concepts about the essence of this phenomenon.

Studies of the authors of recent years not only approved a broader view of the burnout syndrome, but also made it possible to significantly increase the sphere of its manifestation, without limiting the research to the social environment only [10].

Mental burnout is now recognized as a professional and individual crisis that is associated with hard work in general, and not only with personal relationships.

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兴奋剂使用内源性障碍谱患者的动机和koping策略
**STIMULANT USE MOTIVATION AND KOPING STRATEGIES
IN PATIENTS WITH ENDOGENOUS DISORDER SPECTRUM**

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注解。 该研究考察了内源性精神障碍患者滥用精神活性物质（兴奋剂）动机的具体情况，特别是主要关注使用精神活性物质的病理因素。 通过应对策略作为避免和补偿行为的变体的棱镜来看待成瘾的动机，但总的来说，低效应对。 对于患有精神分裂症谱系障碍的患者，与检查的其他患者组不同，动机主要是ataraktic和刺激行为的活动过度，具有社会和成瘾组件的轻微影响。

关键词：精神分裂症，内源性谱，精神兴奋剂，成瘾，动机，应对策略

Annotation. *The study examines the specifics of the motivation for the abuse of psychoactive substances (stimulants) by patients with mental disorders of the endogenous spectrum, in particular, the main attention is paid to the pathological factor of using psychoactive substances. Motivation of addiction is viewed through the prism of coping strategies as a variant of avoiding and compensating behavior; but, in general, inefficient coping. For patients with schizophrenic spectrum disorders, unlike the other group of patients examined, the motivation was primarily ataraktic and stimulating the hyperactivity of behavior; with a slight effect of the social and addictive component.*

Keywords: *Schizotypal disorder, endogenous spectrum, psychostimulants, addiction, motivation, coping strategy*

The combination of two simultaneously developing pathological processes (endogenous and addictive) affects both and creates significant differential diagnostic difficulties.

The abuse of narcotic substances is due to a number of factors. The social factors include traditional, submissive, pseudo-cultural. They reflect the need for grouping, submission, introduction to the youth subculture, respect for traditions.

Personal factors include hedonistic (the desire to enjoy the use of psychoactive substances), ataractic (the desire to neutralize negative emotional experiences, anxiety, fear), hyperactive behavior (the desire to achieve a stimulating, disinhibiting effect and saturation of the sensorium, the desire to get out of boredom, psychological emptiness, unemployment, inaction or a desire to increase the effectiveness of its activities).

Pathological factors are abstinence, addictive (the need to change the state of consciousness), self-harm (the need for auto-aggression) [1, 2].

According to psychologists, the use of psychoactive substances in order to correct their condition can be considered an ineffective coping strategy.

It is known that conscious coping with stress is an important factor influencing the level of social adaptation, as well as the prognosis of the disease. In persons suffering from mental disorders, there is a lack of skills in social and problem-solving behavior [3, 4], which interferes with the ability to effectively cope with stressful life situations. Also, it was noted, that patients use inadequate ways of achieving goals, as a result of which patients more often resort to non-adaptive coping behaviors [5–9].

Folkman S., Lazarus R.S proposed a dichotomous classification of coping strategies, focused on two main aspects - problem-focused and emotionally-focused [10, 11]. Lack of social skills, a rare appeal to problem-focused strategies and excessive preference for emotionally-focused styles of coping behavior negatively affect the adaptation of schizophrenic patients [12–16].

Non-adaptive strategies include emotional response in a stressful situation; denial of a stressful event; “Mental withdrawal” - psychological distraction from the source of stress through entertainment, etc .; “Behavioral suspension” - refusal to resolve the situation. The preference of avoiding strategies is considered by most authors as a psychological risk factor in the deterioration of the subject [14, 17-19]. The use of alcohol and drugs is divided into a separate group of coping behavior [20, 21]. Patients suffering from schizotypal disorder maladaptively respond to stressful situations.

Coping strategies used by patients with endogenous spectrum disorders have a number of characteristic features. These include "avoidance", "optimism" and "suppression of emotions." For example, “active avoidance” correlates with somatic and psychotic symptom complexes; “making sense” with paranoia, depression, anxiety; “Confusion” is associated with depression, hostility and obsessive-compulsive manifestations [12]. The authors [22] identified in patients with schizophrenia "not a lack of skills and poverty of the repertoire of the chosen methods of solving difficult life situations, but the impossibility, due to cognitive disorders, to comprehend and adequately assess a stressful situation."

For a healthy person, there is no characteristic feeling of helplessness, a feeling of inner emptiness and difficulties with goal setting, and for a patient with schizophrenia, with pronounced weakness of I, these are typical.

Motivation correction of the emotionally negative state and motives for stimulating the emotionally positive state are also highlighted. It was noted that patients with stimuli of the emotional-positive state were characterized by the prevalence of dissocial behavioral disorders and the severity of the social consequences of the use of psychoactive substances. In patients with motives for correcting an emotional-negative state, symptoms of organic emotional disorders prevailed, and the severity of the addiction syndrome with pronounced psychopathological and medical consequences was noted. The former demonstrated a more favorable profile of protective-coping behavior associated with less use of immature and non-adaptive psychological defense mechanisms (“regression”, “substitution”) and non-constructive coping types (“distancing”, “self-control”, “flight-avoidance”). [23-25].

he aim of the study is to determine the characteristics of the use of stimulants by patients with low-progreduated forms of schizophrenia or with remissions of schizophrenia of various qualities.

52 men aged 21 to 38 years, abusing stimulants, were studied using clinical, psychopathological and experimental psychological methods. All of them committed offenses and were sent for forensic psychiatric examination to the V.P. Serbsky Center. 29 of them (55.8%) suffered from addiction to stimulants, personality disorder, or organic mental disorder in combination with addiction. 23 (44.2%) patients suffered from endogenous spectrum disorders (schizotypal disorder, remission of schizophrenia of various qualities), combined with stimulant addiction [26].

The use of stimulants in premorbid mentally healthy individuals was more associated with social factors (group use, curiosity, desire to join the youth subculture), hedonistic, recreational (relaxing effect) and stimulating (aesthetics of nightclubs, night work) needs.

Persons with organic mental disorders (8, 15.4%) and personality disorders (3, 5.8%), along with the realization of recreational and hedonistic needs, resorted to coping strategies to improve their condition (coping asthenic and affective (sub-depressive) disorders). In cases of an established addiction syndrome (18, 34.6%) - with the desire to achieve an altered state, a pronounced attraction to the use of a narcotic substance.

The use of stimulants by patients with schizophrenia and schizotypal disorder (23, 44.2%) was mostly not addictive, often associated with a change in mental state and practically did not depend on social factors. At the initial stages of schizophrenia, the motivation to use stimulants was an inefficient coping strategy

with the desire to cope with such endogenous spectrum disorders as a decrease in energy potential with apathetic-asthenic manifestations, erased depressions with the loss of a sense of joy and interest in life, brightness of colors, a sense of "emptiness", social isolation with communication difficulties, poor understanding of the motives of others, increasing autism, cognitive impairment with difficulty when concentrating and anxiety.

In some cases, the use of stimulants was built into the outline of a specific world view and pseudo-philosophical concepts, when the use of psychoactive substances was considered as a way to learn the world, to obtain specific information, "spiritual" practice, allegedly allowing you to understand the changing as a result of the flow of the endogenous process "I" its role in the system of existing interpersonal relationships and the world as a whole.

The described features of motivation were characteristic of patients suffering from low-progreduated forms of schizophrenia (schizotypal disorder).

The use of stimulants gave a temporary effect in the form of activity, vivacity, an interest in life, facilitated contact with others. However, further negative aspects of addiction appeared (feelings of incomprehensible fears, anxiety, restlessness, fear of going crazy, loss of control over accelerating thoughts, difficulty concentrating, transient psychotic episodes).

Thus, for patients with schizophrenic spectrum disorders, characteristic was primarily ataraktic and stimulating the hyperactivation of behavior, the motivation for the use of psychoactive substances, with little influence of the social and addictive component, which can be considered as a non-effective variant of the coping strategy.

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诊断死亡后红细胞的变化
从一般低温

**DIAGNOSIS OF CHANGES IN RED BLOOD CELLS AFTER DEATH
FROM GENERAL HYPOTHERMIA**

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抽象。在医学上，体温过低和身体“复活”的问题依然存在。缺乏对超低温下死亡机制特征的了解使得有理由补充致命低温过程的细胞和分子机制的想法。本研究的目的是使用原子力和扫描电子显微镜评估超低温（低于 -40°C ）致命低温期间红细胞形态的特征。该研究的对象是死于低温和枪伤的人的血涂片。该研究使用NT-MDT原子力显微镜，半融合模式的SolverNext模型和JSM-7800F高分辨率扫描电子显微镜进行。在一名在超低温（ -42°C ）的条件下死于体温过低而在第一天被涂抹的男性中，红细胞的特征是枪伤最小的变化。保留了具有平坦表面的红细胞discocytic形式，然而，我们发现红细胞中央凹陷的深度增加，这可能与红细胞体积的增加有关。已经确定，即使血液采集时体区温度的微小差异（ $\Delta 2.4^{\circ}\text{C}$ ）也会影响完全解冻后各种形式的红细胞的比率：温度越低，越多，出现退行性红细胞形式。在第四天解冻尸体后，所有红细胞（100%）具有不同程度的畸形，更平坦的表面，直径增加和血浆的不均匀性和粗糙度，表明溶血的迹象。

关键词：红细胞，低温死亡，原子力显微镜，扫描电子显微镜。

Abstract. *In medicine, the problems of hypothermia and the "revival" of the body remain open. The lack of knowledge of the features of the mechanisms of dying at ultralow temperatures gives reason to supplement the idea of the cellular and molecular mechanisms of the process of fatal hypothermia. The purpose of this study was to evaluate the characteristics of the erythrocyte morphol-*

ogy during fatal hypothermia under ultralow temperatures (below -40°C) using atomic force and scanning electron microscopy. The object of the study was blood smears of persons who died from hypothermia and a gunshot wound. The study was carried out using an NT-MDT atomic-force microscope, the SolverNext model in the semicontact mode, and a JSM-7800F high resolution scanning electron microscope. In a man who died of hypothermia under conditions of ultralow temperatures (-42°C), which was smeared during the first day, the erythrocytes were characterized by minimal changes than in death from a gunshot wound. The erythrocyte discocytic form with a flat surface was retained, however, we found an increase in the depth of the central concavity of the erythrocytes, which is possibly associated with an increase in the volume of erythrocytes. It has been established that even a small difference in the temperature of body regions ($\Delta 2.40\text{C}$) at the time of blood collection affects the ratio of various forms of red blood cells after complete thawing: the lower the temperature was, the more the degenerative forms of red blood cells appear. After the thawing of the corpse on the fourth day, all erythrocytes (100%) had a different degree of dysmorphism, a more flattened surface, an increase in diameter and heterogeneity and roughness of the plasma, indicating signs of hemolysis.

Keywords: erythrocytes, death from hypothermia, atomic force microscopy, scanning electron microscopy.

Introduction. In modern conditions of Arctic exploration, the problem of undercooling and body hypothermia in humans and animals becomes fundamental and applied. Despite the progress made over the past few decades in the field of forensic medicine, the possibility of post-mortem diagnosis of hypothermia remains relatively limited [1]. Currently, the world has not fully studied the issues of death from general cooling under conditions of ultra-low temperatures (below -40°C). In real conditions, people who died from hypothermia (by external signs) are delivered to the morgue without resuscitation. The fact that during the first day (a very rare pulse, low blood pressure) the victims are in a state of cold anabiosis is significant, and the likelihood of recovery of the organism's activity is not excluded [2]. The results showed that deaths due to hypothermia are characterized by elevated levels of ketones in the blood and other biological fluids, elevated concentrations of adrenaline in the urine, elevated levels of cortisol in the blood serum after death from femoral blood and elevated values of free cortisol in the urine [3]. The study of the state of erythrocytes in critical terminal and post-resuscitation states makes it possible to identify how cells responsible primarily for gas exchange in the body react to strong metabolic changes that occur in critical states, and how their functional, structural and biochemical properties change. Therefore, restoring or maintaining a population of functional erythrocytes can solve not only

the problems associated with gas exchange, but also restore the metabolism that is disturbed during critical conditions [4]. Considering that about 200 people die from hypothermia every year during the winter months (below -40°C) in the Republic of Sakha (Yakutia), and also given the insufficient knowledge of the features of dying mechanisms at ultra-low temperatures, this study is of interest and is relevant. The results of this study can complement the understanding of the cellular and molecular mechanisms of the process of fatal hypothermia.

Purpose of this study was to assess the characteristics of the erythrocyte morphology during fatal hypothermia under ultralow temperatures (below -40°C) using atomic force and scanning electron microscopy.

Material and research methods. The object of study was samples of blood smears, made according to the standard technique without fixation and staining at the autopsy of two middle-aged men who died from hypothermia and a gunshot wound. Blood smears were made immediately after the corpses were delivered (1st day) to the “Bureau of Forensic Medical Examination” of the Ministry of Health of the Republic of Sakha (Yakutia). Additionally, in case of fatal hypothermia, blood samples were made on the 4th day after complete thawing of the body. Tab. 1 presents data on the temperature of the body areas from which blood smears were prepared.

Table 1
Temperature in the body areas of the deceased from hypothermia

Body area	Temperature, $^{\circ}\text{C}$	
	1st day	4th day
Brain	- 0,1 $^{\circ}\text{C}$	+17,2 $^{\circ}\text{C}$
Anterolateral neck surface	- 2,5 $^{\circ}\text{C}$	+17,2 $^{\circ}\text{C}$

The study of blood smears was carried out using an atomic-force microscope of the NT-MDT (Zelenograd, Russia), model SolverNext. Processing and counting of data was performed using the program "Nova". Scanning was carried out in the semi-contact mode, the scanning area was $50 \times 50 \mu\text{m}$ (512 points), scanning speed was 0.5 Hz, the NSG 10 cantilever with a radius of curvature of no more than 10 nm was used for all measurements. To assess the irregularities of the erythrocyte topography and thickness, the S1 line was used. Also in this study, a high resolution raster electron microscope (REM) of JSM-7800F (Japanese Electron Optics Laboratory - JEOL, Japan) was used. The considered REM, having an increase range of 25-1,00000, allows to investigate an object at an accelerating voltage of 0.1-30 kV. In this work, we used the lower detector of secondary electrons.

Results and discussion. In order to identify the features of the erythrocyte morphology during fatal hypothermia for 1 day, we analyzed the blood smears of two middle-aged men who died from hypothermia (at an ambient temperature of 42 ° C) and a gunshot wound. Analysis of the two AFM images of erythrocytes indicates their significant differences. In the field of view, in death from a gunshot wound, pronounced poikilocytosis is visualized, with the predominance of echinocytes and the formation of conglomerates. It is known that the echinocyte resembles the shape of a sea urchin, has spikes of the same size, which are located evenly on the surface of the erythrocyte. In some cases, the formation of echinocytes is accompanied by the release of hemoglobin and part of the internal contents of the erythrocyte through small areas of destruction of the cell membrane. The functional and physiological significance of echinocytosis is not well understood. One of the reasons for the formation of echinocyte is the increased permeability of erythrocyte membranes for K⁺ and Na⁺ ions [5]. Echinocytosis not only does not prevent the formation of aggregates, but is accompanied by the formation of aggregates of increased strength [6].

In hypothermia, erythrocytes having a biconcave shape are visualized on the AFM image — discocytes with a flat surface and their conglomerates.

In order to assess the quantitative characteristics of erythrocytes with various causes of death, an analysis of graphs of the horizontal section of blood cells was carried out. The erythrocyte AFM scan in a gunshot wound indicates the presence of outgrowths on its surface, as well as a significant decrease in the depth of the concavity, i.e. his acquisition of a flattened surface.

On the AFM scan of the horizontal cross section of the erythrocyte on the 1st day after the death from hypothermia, a smooth surface relief is observed, as well as an increase in the depth of the concavity (0.645 μm), which exceeds the normal value (0.200 μm) by 3 times, i.e. the degree of concavity of erythrocytes becomes pronounced. The next stage of our work was the assessment of changes in the erythrocyte morphology depending on the time of thawing of the corpse, i.e. on the 1st and 4th day. Most of the membrane proteins are located on the inner (cytoplasmic) side of the membrane and form a network of filaments (actin and intermediate), which serves to maintain the normal form of the erythrocyte. The elasticity of the erythrocyte membrane is provided by the interaction of cytoskeleton proteins. Their aggregation activity and deformability largely depend on the structural organization of erythrocyte cell membranes, these indicators determine the ability of cells to microcirculation. In erythrocyte, ATP is formed during anaerobic glycolysis. When ATP is inhibited, the erythrocyte deformability decreases, the cell shape changes and the membrane permeability to ions increases [4]. During echinocytic transformation, the charge of the erythrocyte surface membrane changes significantly, which is a necessary condition for maintaining the stabil-

ity of the suspension of erythrocytes - plasma. Echinocytosis entails the aggregation of red blood cells [7]. Echinocytic transformation is due to the formation of cross-links between the spectrin and hemoglobin. Membrane material is lost by microvesiculation [8]. Thus, the AFM data indicate fundamental differences in the erythrocyte morphology depending on the cause of death, in particular, in the first hours after death during fatal overcooling, the erythrocytes have a flat (without outgrowths) surface and an increased central concavity. In blood smears in the first hours of death from a gunshot wound, red blood cells take on an echinocytic form, which is characterized by a decrease in the depth of the concavity. The conglomeration of erythrocytes is observed in both cases - with a gunshot wound, and hypothermia. To determine the effect of ambient temperature on erythrocytes, in our case, with complete thawing of a corpse (4th day) after fatal hypothermia, we compared REM images of blood samples on the 1st and 4th days. On REM images (1x1000) of a smear of a mixture of blood with cerebrospinal fluid, taken on the 1st day after death from the intracranial region, the crystallization process is visualized, since 90% of cerebrospinal fluid is water.

Despite crystallization, in the field of view there are surviving diskocytes (normal erythrocytes) with preserved concavity. A multitude of small particles are visualized in the extracellular fluid on the 1st day, however, at high magnification (1x5000), smaller particles located around the dismorphic erythrocytes are visualized.

On the 4th day in the field of view there is a large number of erythrocytes with a pronounced degree of dysmorphism. Visualization of erythrocytes with a larger increase (1x5000) made it possible to classify all erythrocytes (100%) to degenerative (irreversible) pathological forms - acanthocytes (cells with unequal size teeth) associated with a structural defect of the membrane. For a quantitative characterization in dynamics, we compared REM images of erythrocytes from the neck of a man who died of blood hypothermia on the 1st and 4th days..

REM images on the 1st day are characterized by moderate anisocytosis of discocytic erythrocytes with pronounced concavity. Next, erythrocyte differentiation was made according to the forms, which showed that on the 1st day normocytes dominated in the blood smear - 68%; spherocytes accounted for 5%; target cells - 5% and ovocytes - 22%.

On the 4th day, along with normocytes, a large number of various degenerative forms of erythrocytes appear (normocytes - 12%; spherocytes - 9%; echinocytes - 5%; ovalocytes - 40%; dacrococytes - 11%; codocytes - 20%; keratocytes - 3%), and flattening of the surface of red blood cells (reduction of concavity) is also noted. Probably, such a different ratio of erythrocyte forms in the brain and the anterior surface of the neck is explained by the temperature difference ($\Delta 2.4^{\circ}\text{C}$) in different areas of the body at the time of taking blood for smears: in our case, the lower

the temperature (Table 1), the larger the degree of red blood cell changes after the thawing of a corpse. Analysis of three-dimensional AFM images of erythrocytes from the neck area during hypothermia on the 1st day revealed anisocytosis, poikilocytosis and aggregation of dysmorphic erythrocytes, as well as a relatively even and smooth relief of the plasma. The AFM image on the 4th day is characterized by a flattened form of erythrocytes with a tendency to an increase in cell diameter, as well as plasma roughness with many shallow concavities, probably from fragments of membranes of destroyed erythrocytes.

To further clarify the quantitative characteristics, we measured graphical images from a scan, as a result of which it was revealed that red blood cells within 1 day after death from hypothermia have indicators close to normal ranges, in particular, the average depth of the concavities was $0.513 \mu\text{m}$, diameter erythrocytes $7 \mu\text{m}$, the height of erythrocytes $0.620 \mu\text{m}$. The average values of the similar parameters of erythrocytes on the 4th day significantly changed: the depth of the concavities and the height of erythrocytes decreased ($0.3 \mu\text{m}$ and $0.38 \mu\text{m}$, respectively), and the diameter of the cells increased ($10.6 \mu\text{m}$). To calculate the volume (fl) of erythrocytes, the formula was used [9]:

$$V = k \left[\frac{l_1 + l_2}{2} (R^2 + Rr + r^2) - \frac{n^1 + n_2}{2} r^2 \right] \quad (1)$$

where l_1 and l_2 – the height of the walls of the erythrocyte to the left and right, respectively (μm); n^1 and n^2 – depth of the concavity to the left and right, respectively (μm), R and r – the radii of the base and the top of the erythrocyte (μm); coefficient k – fitting parameter, which includes all constants and takes into account the deviation of the real volume of the erythrocyte from the "ideal" model. The calculation found that the volume of erythrocytes on the 1st day of death from a gunshot wound and on the 4th day of hypothermia is reduced compared with the norm (Fig. 7). However, on the first day of hypothermia, the volume turned out to be the highest, exceeding 1.3 normal values.

According to available research [10], the range of changes in the volume of red blood cells is small. If the volume increases by more than 1.6 times, the erythrocyte will burst: this is the maximum volume that can be enclosed in a practically inextensible cell membrane having a surface area of a normal erythrocyte. Reduction of the volume by half is practically impossible, because the concentration of proteins in the cell increases so much that hemoglobin becomes hard, and the erythrocyte loses its ability to deform and pass through narrow capillaries in the spleen.

Conclusion. Thus, our findings suggest significant differences in the erythrocyte morphology depending on the cause of death. In particular, on the 1st day of death from a gunshot wound, most of the erythrocytes take on an echinocytic

form, appendages appear, the depth of the hollow (concavity) decreases, and conglomerates are formed. On the contrary, in a man who died from hypothermia under conditions of ultra low temperatures (-42°C), a blood smear of which was made within 1 day, the erythrocytes were characterized by minimal changes. The erythrocyte discocytic form with a flat surface was retained, however, conglomerates were formed and the depth of the central concavity of erythrocytes was increased, which is probably due to an increase in the volume of erythrocytes. It has been established that even a small difference in the temperature of the body regions ($\Delta 2.4$) at the time of taking blood affects the ratio of various forms of red blood cells after complete thawing: the lower the temperature, the more degenerative forms of red blood cells appear. After the thawing of the corpse on the 4th day, all the erythrocytes (100%) had a different degree of dysmorphism, a more flattened surface, an increase in diameter and heterogeneity and roughness of the plasma, indicating signs of hemolysis were observed.

The use of atomic force and raster electron microscopy allows obtaining images of red blood cells to study the morphology and relief of cells, which are associated with the physiological status of cells. The results obtained by us indicate the need for further study of this problem to identify the possibility of cell recovery, their normal population and functional properties, depending on the method of warming the dead from hypothermia under certain temperature conditions.

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创伤性脑损伤急性期复杂的强化治疗
**COMPLEX INTENSIVE TREATMENT IN ACUTE PERIOD
OF TRAUMATIC BRAIN INJURY**

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注解。为了确定使用金刚烷胺和肌苷 - 烟酰胺 - 核黄素 - 琥珀酸在严重创伤性脑损伤患者的强化治疗中的安全性，进行了一项前瞻性对照，盲法，随机研究，其中包括54人。第一组包括19名接受标准强化治疗的人。在第二组（18人）中，金刚烷胺被纳入强化治疗的复合体中。在III组（17人）中，肌球蛋白 - 烟酰胺 - 核黄素 - 琥珀酸被包括在强化治疗的复合物中。肌苷 - 烟酰胺 - 核黄素 - 琥珀酸或金刚烷胺（损伤后3天）在早期严重创伤性脑损伤的复杂强化治疗中的使用，只要血流动力学和呼吸得到纠正，不会改变结构，也不会改变加剧器官衰竭的表现。

关键词：创伤性脑损伤，金刚烷胺，肌苷 - 烟酰胺 - 核黄素 - 琥珀酸

Annotation. *In order to determine the safety of using amantadine and inosine-nicotinamide-riboflavin-succinic acid in intensive treatment of victims with severe traumatic brain injury, a prospective controlled, blind, randomized study was conducted in which 54 people were included. Group I included 19 people who received standard intensive treatment. In group II (18 people) amantadine was included in the complex of intensive treatment. In group III (17 people), inosine-nicotinamide-riboflavin-succinic acid was included in the complex of intensive treatment. The use of inosine-nicotinamide-riboflavin-succinic acid or amanta-*

dine (3 days after injury) in the complex intensive treatment of severe traumatic brain injury in the early periods, provided that hemodynamics and respiration are corrected, does not alter the structure and does not aggravate the manifestation of multiorgan failure.

Keywords: *traumatic brain injury, amantadine, inosine-nicotinamide-riboflavin-succinic acid*

Brain injuries are accompanied by a long and severe course of the traumatic disease [1,2]. Despite the increase in knowledge of the pathophysiology of acute severe traumatic brain injury (TBI), the improvement of intensive treatment technologies, mortality reaches from 40.0 to 57.0% [3]. The urgent task of resuscitation is to find ways for effective protectors to help maintain the flow of this process at an adaptive level. Inosine-nicotinamide-riboflavin-succinic acid, as a balanced multi-component drug, improves tissue respiration and has neuroprotective, anti-hypoxant and antioxidant effects [4]. Among the many pathophysiological effects of TBI, changes in the endogenous level of catecholamines, including dopamine, epinephrine and norepinephrine, play an important role [5]. Available evidence suggests that treatment-oriented catecholaminergic system therapy may reduce functional deficiency after TBI [6]. Additional studies are needed on the effect of dopaminergic agents on the body's protective and adaptive reactions and on the effectiveness of these drugs in the treatment of TBI [7,8]. The drug amantadine promotes the release of dopamine from nerve endings, which makes the latter more accessible to activate dopaminergic receptors [9]. There is evidence of the effectiveness of this drug in patients in the period of recovery from coma and during the vegetative state [10,11] The drug amantadine is a dopaminergic agent, is on the list of vital and essential drugs in 2018 [12], has indications in the form of "loss of consciousness as a result of traumatic brain injury" (Register of Medicinal Products of Russia) and prospects for treatment of patients with acute severe TBI.

Research task: determination of the safety of using inosine-nicotinamide-riboflavin-succinic acid and amantadine in the intensive treatment of victims with severe traumatic brain injury.

Material and methods. To solve the problem, a prospective controlled blind randomized study was conducted, which included 54 patients aged 40.0 (28.0; 52.0) years. Monitoring of victims included common and specific modalities: ECG (in 3 leads), blood pressure (indirect method), pulse oximetry, capnography, body temperature, transcranial Doppler, electroencephalography (EEG), neuroimaging (CT/MRT). Inclusion criteria were age from 18 years; the presence of severe brain damage with a level of loss of consciousness on the Glasgow Coma Scale (GCS) from 4 to 8 points; the overall severity of the condition on admission, as measured by the Simplified Acute Physiology Score (SAPS II) in the range of

15-90 points. The exclusion criteria were the presence of pregnancy and severe chronic diseases in the stage of decompensation, as well as the preservation of the partial pressure of oxygen in arterial blood of less than 60 mm of mercury to 2–3 days against the background of artificial lung ventilation and/or a persistent decrease in systolic blood pressure of less than 70 mm of mercury. According to CT scan of the brain, the following types of damage were diagnosed in the victims: severe brain contusion (54 people) and acute brain compression with a traumatic hematoma (34 people). 42 patients were operated on. Of these, 12 patients were installed intracranial pressure measurement sensor - intraventricular.

Assessment of the presence and severity of organ dysfunction in dynamics was carried out daily on the Multiple Organ Dysfunction Score (MODS 2) and Sequential Organ Failure Assessments Score (SOFA) scales. All patients received a comparable in volume course of intensive treatment in accordance with national recommendations for the treatment of traumatic brain injury [13]. Starting from the 3rd day of the post-traumatic period (with the achievement of the correction of hemodynamic and respiratory parameters), patients were divided by the envelope method into three groups. Group I included 19 victims who received standard intensive treatment. Group II included 18 victims for who, by decision of the medical commission of the hospital, amantadine was included in the intensive treatment program. Group III consisted of 17 people, inosine-nicotinamide-riboflavin-succinic acid was included in the complex of intensive treatment. Amantadine was administered intravenously 200 mg once daily for 3 hours (infusion rate of 50–60 drops / min) for 10 days, followed by a gradual decrease in dose. Inosine-nicotinamide-riboflavin-succinic acid was started to be administered from the 3rd day of the post-traumatic period: 10 ml of the drug cytoflavin diluted with 200 ml of 10% glucose solution were administered intravenously drip at a rate of 140 drops (7 ml) per minute for 7 days. On the 9th day of the post-traumatic period, the conventional therapy was continued, adjusting the treatment regimen depending on the patient's condition.

The control (I) and test groups (II and III) analyzed were comparable in age ($p = 0.98$) and sex ($p = 0.61$). All patients were diagnosed with severe brain contusion. Acute compression of the brain by traumatic hematoma was diagnosed in 10 people of the 1st group, in 12 people of the 2nd group and in 12 people of the 3rd group ($p = 0.57$). The surgical intervention was carried out in the first group in 14 victims, in the second group in 15 and in the third group in 14 ($p = 0.52$). According to the severity of the condition both on admission and on the 3rd day of the post-traumatic period, there was no statistically significant difference between the analyzed groups (Table 1).

Table 1 - The severity of the condition and damage in the observation groups at the time of admission and the 3rd day

Indicators	Group I (control) (n=19)	Group II (test) (n=18)	Group III (test) (n=17)	p
The number of points on the GTC **	6.0 (5.0; 7.0)	6.0 (5.0; 7.0)	6.0 (5.0; 7.0)	0.47
The number of points on the scale of SAPS II **	34.5 (28.0; 43.0)	33.0 (25.0; 47.0)	32.0 (26.0; 48.0)	0.19
The number of points on the MODS 2 scale on the 3rd day **	4.0 (3.0; 5.0)	4.0 (3.0; 5.0)	4.0 (3.0; 5.0)	0.59

Data is given as *M (-95% CI; +95% CI) and **Me (LQ; UQ)

The study was approved by the Ethical Committee of Rostov State Medical University. Statistical data processing was performed using the statistical package STATISTICA 6.0 (StatSoft Inc., USA). The analysis of the conformity of the type of distribution of the trait to the law of normal distribution was carried out using the Shapiro – Wilk criterion. Descriptive statistics of quantitative traits in a normal distribution are presented as an medium (M) and a confidence interval for an average (CI). When the distribution of a trait that differs from the normal one is in the form of a median (Me) and an interquartile range (25 and 75 percentiles). The comparison of independent variables in the three groups was carried out using the non-parametric method using the Kruskal-Wallis test. The criterion of significance for statistical calculations in this work was the value of the error probability index (p) of no more than 5%, that is, $p \leq 0.05$.

Results. In the study, there was no statistically significant difference in the dynamics of diagnostic signs of TBI epileptogenicity between the comparison groups. The need for relief of convulsive seizures on the 3rd day of the post-traumatic period was recorded in 36.84% in the 1st group, 38.89% in the second and 37.62% in the third ($p = 0.88$). In the subsequent periods of observation, a rarer treatment with anticonvulsants ($p = 0.74$) was recorded in the test groups. There was no statistically significant difference in the EEG pattern between the observation groups for the formation of interhemispheric asymmetry ($p = 0.58$), paroxysmal activity ($p = 0.51$), and the formation of the focus of pathological activity ($p = 0.62$).

The inclusion of amantadine or iosin-nicotinamide-riboflavin-succinic acid in the complex treatment of severe TBI from 3 days post-traumatic did not lead to an increase in the incidence of multiple organ dysfunctions (with the involvement of three or more systems). In the II group, the development of multiple organ dysfunctions (affecting dysfunction of three or more systems) on the 7th day of

the post-traumatic period was observed in 44.4% of cases (8 out of 18), in the III-rd - 50.7%. In Group I, dysfunction of three or more systems on the 7th day of the post-traumatic period was recorded in 68.4% (13 out of 19), $p = 0.04$. In the group using amantadine, the number of cases of disturbances of cardiovascular (1.4 times; $p = 0.048$) and respiratory (1.4 times; $p = 0.049$) systems was statistically significantly reduced. Inclusion of inosine-nicotinamide-riboflavin-succinic acid into the complex of intensive treatment allowed to increase the proportion of patients who had good recovery of functions at discharge from the hospital (by 7.1%) and reduce the number of patients with varying degrees of disability (7.3%), $p = 0.049$.

Discussion. The study so far is based on a small clinical material. Due to the small sample, it is not possible to judge the safety of the use of these drugs in this group of patients. However, the assigned results suggest that the early inclusion of inosine-nicotinamide-riboflavin-succinic acid and amantadine in the treatment of severe TBI does not aggravate the manifestations of multiple organ failure, does not change the structure of multiorgan dysfunctions, and is not accompanied by an increase in the degree of disability at discharge from the hospital. The study can serve as a starting point for the continuation of a broader study in the direction of determining the safety and efficacy of amantadine and inosine-nicotinamide-riboflavin-succinic acid in severe TBI. To obtain final conclusions about the safety of the drug, multicenter studies with an appropriate design are necessary.

Conclusions. The inclusion of inosine-nicotinamide-riboflavin-succinic acid and amantadine in the treatment of patients with severe TBI in the acute period does not change the structure and does not aggravate the manifestations of multiorgan failure.

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消毒剂«Glavchlor extra»对蛔虫卵的去除活性
**DESINVASIVE ACTIVITY OF DISINFECTANT
«GLAVCHLOR EXTRA» FOR ASCARIS SUUM EGGS**

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注解。寻找有效的杀灭剂对解决环境对象的消失问题起着重要作用。本文介绍了消毒剂“GLAVHLOR EXTRA”与蛔虫卵相关的杀卵活性研究结果。根据普遍接受的方法对猪蛔虫的非侵入性卵的纯培养物进行测试。通过培养方法测定处理后卵的活力。确定浓度为50%（通过制备），暴露时间为3小时，以及浓度为1.25%（通过制备）且暴露1天的药剂“GLAVHLOR EXTRA”具有对猪蛔虫卵有完全的消毒作用。

关键词：消毒剂，消毒，杀卵活性，猪蛔虫卵，猪蛔虫

Annotation. *The search for effective ovocides plays an important role in solving the problem of disinvasion of environmental objects. The article presents the results of the study of the ovocidal activity of the disinfectant “GLAVHLOR EXTRA” in relation to Ascaris suum eggs. Tests were carried out according to generally accepted methods on the pure culture of non-invasive eggs of pork roundworm. The viability of the eggs after treatment was determined by the method of cultivation. It was established that the agent “GLAVHLOR EXTRA” at a concentration of 50% (by preparation) with an exposure time of 3 hours, as well as at a concentration of 1.25% (by preparation) with an exposure of 1 day, has a complete disinvasive effect on pork roundworm eggs.*

Keywords: *disinfectant, disinvasion, ovicidal activity, eggs of pork roundworm, Ascaris suum*

An important factor in the transmission of pathogens of parasitosis are objects of the external environment contaminated by pathogenic agents. So on the territory of children's institutions there is a significant circulation of the causative agent of enterobiosis. Geohelminth eggs, cysts and oocysts of parasitic protozoa accumulate in the premises and in the territory of livestock farms, fur farms, in the residential zone. [1,10,14]. The soil plays a leading role in the spread of toxocarosis, which is a serious problem, especially in large cities. The increased risk of contamination of environmental objects with pathogens of parasitic diseases is provided by medical, preventive and scientific institutions where they are being worked on [4,10]. In this regard, disinfection of the environment from their pathogens is of great importance in the prevention of parasitic diseases [6, 8, 12]. In the complex of measures for the disinvasion of objects of the external environment, the most important role is played by chemicals. However, today the range of such chemicals is very small. In addition, not all of them possess such properties as a wide spectrum of action, ease of preparation, reliability of the disinfecting effect. Therefore, the search for new highly effective antiparasitic drugs with a broad spectrum of activity remains relevant [3, 8, 13]. The selection of such drugs is usually carried out on such highly resistant to external influences objects as ascaridat eggs [2, 5, 9].

Purpose of research. Study of the disinfecting activity of the disinfectant “GLAVHLOR EXTRA” (hereinafter referred to as the chemicals) for *Ascaris suum* eggs.

Materials and methods. The experiments were performed on a pure culture of non-invasive eggs of pork roundworm. Tests were carried out according to generally accepted methods [7]. The viability of the eggs after treatment with the agent was determined by cultivation [11]. Observation of the development of eggs was carried out twice a week, while paying attention to the crushing of eggs and the formation of larvae. With the beginning of the formation of the larvae, the test samples were viewed in a Leica DM 1000 optical microscope (Leica, Germany) on a thermostatic table. The detection of mobile larvae in the sample indicated the absence of disinvasive activity of the agent in this variant of the experiment.

“GLAVHLOR EXTRA” chemical is a clear liquid from colorless to light yellow color with the smell of chlorine and used odorants. The composition includes sodium hypochlorite and other auxiliary components. Mass fraction of active chlorine in the product: 5.5-6.5%. Mass fraction of alkaline components in terms of NaOH: 3.0-6.0%. Density at 20°C: 1,100-1,200 g/cm³. Hydrogenic pH of 1% aqueous solution: 11.0-13.0. The chemical has an antimicrobial effect against gram-negative and gram-positive bacteria, including causative agents of nosocomial infections, *Mycobacterium tuberculosis* (tested for *Mycobacterium terrae*), spore forms of bacteria, viruses, fungi of the genus *Candida*, *Trichophyton*, mold fungi.

We evaluated the effectiveness of the chemical solutions for eggs of pork roundworm in the following treatment modes: concentration (hereinafter indicates the concentration of the working solution of the product by the preparation) 50% with an exposure of 3 hours, a concentration of 33% and 11% with an exposure of 4 hours, and also a concentration of 20 %, 10%, 5%, 2.5%, 1.25% and 0.6% with an exposure of 1 day. In each test variant, about 300 eggs were used.

Results and discussion. As a result of the tests, it was found that the agent “GLAVHLOR EXTRA” at a concentration of 50% within 3 hours completely destroys 100% of the eggs of pork roundworm. Under the influence of an agent in concentrations of 33% and 11%, over 4 hours, 99% and 80% of eggs, respectively, were destroyed. The eggs that remained after treatment were smaller than in the control and had a round shape. In some of them, after 15 days of cultivation, the larvae were visible, in the form of a thin ring located around the perimeter of the egg. After exposure to the agent at a concentration of 33%, two of the four surviving after processing the eggs contained such larvae, and when exposed to the agent at a concentration of 11%, such larvae were in all remaining eggs, while many of the larvae moved.

During prolonged exposure for 1 day, eggs of pork roundworm completely disintegrate under the influence of a 20% concentration of “GLAVHLOR EXTRA”. Lower concentrations of the agent (10%; 5%; 2.5%; 1.2%; 0.6%) for the same period do not completely destroy all the eggs, but reduce their number in proportion to the concentration value. The process of destruction continues inside the eggs remaining at the end of the exposition after their release from the action of the agent. At the same time, the contents of the eggs are in motion, as if “boiling”. In the control variant, at the same time, the eggs are at the stage of crushing. The destruction pattern was observed in the variants of the experiment, starting with a concentration of 1.25% and above. A review on the 4th day showed that in all variants of the experiment the eggs were completely destroyed, except for the variant treated with the preparation at a concentration of 1.25%. In this variant, the destruction of eggs lasted longer and after 13 days nuclear fragments were still floating on the surface of the water. Under the influence of “GLAVHLOR EXTRA” at a concentration of 0.6%, part of the eggs collapsed, but in some of them the larvae developed, and on the 6th day of cultivation it was possible to observe their movement in the egg. In the control experiment, mobile larvae were observed on the 8th day of cultivation.

The results of these studies suggest that the “GLAVHLOR EXTRA” disinfectant, along with high bactericidal, fungicidal and sporicidal activity, has a pronounced disinvasive effect. The active substance that is part of the disinfectant “GLAVHLOR EXTRA” is active chlorine. As follows from the micrographs, active chlorine easily penetrates through the dense five-layer membrane of eggs,

causes destruction of the yolk cells inside the helminth eggs, inactivation of the blastomere in the egg, damage to its structural elements, and then lysis and disintegration of the eggs. The rate of damage and destruction of helminth eggs directly depends on the concentration of active chlorine in the working solution of the disinfectant. The most rapid inactivation of roundworm eggs takes place when exposed to the “GLAVHLOR EXTRA” disinfectant at a concentration of 50% by preparation or at a concentration of 3.0% by active chlorine. It is also important to note that the ovocidal effect of the agent manifests itself in a concentration range of working solutions of 1.25% - 50.0% (by preparation) or in concentration averages of 0.07% to 3.0% for active chlorine at various exposure times.

Conclusions

1. The evaluation of the disinfectant potential of the “GLAVHLOR EXTRA” disinfectant has been carried out. The concentration-time parameters of inactivation of pork roundworm eggs are established.
2. Determination of the survival of pork roundworm eggs by cultivation showed that the working solutions of “GLAVHLOR EXTRA” in a wide range of concentrations cause inactivation and death of some of their most resistant to various external and chemical influences helminth eggs.
3. Structural changes and damage to pork roundworm eggs, lysis, and their complete disintegration revealed by optical microscopy evidence to the high ovocidal potential of the “GLAVHLOR EXTRA” disinfectant
4. Working solutions of the “GLAVHLOR EXTRA” product in concentrations of 1.25-50.0% (by preparation) with an exposure time of 3 hours to 6 days have an effective disinvasive effect on pork roundworm eggs. The agent can be recommended for disinfection of environmental objects contaminated by larvae and eggs of various helminths.

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天然气 - 油 - 水表现 (流体) 污染对里海海洋环境的影响
**IMPACT OF POLLUTION FROM GAS-OIL-WATER
MANIFESTATIONS (FLUIDS) ON THE MARINE ENVIRONMENT
OF THE CASPIAN SEA**

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注解。里海是地球上最大的封闭水库，位于欧亚大陆的内陆地区，在大约560万年前的平均上新世分离，其特点是栖息在其中的动物群的独创性和最丰富的储备。可再生生物资源和不可再生矿产资源。目前确保海洋活动环境安全的趋势通常依赖于海洋石油污染的主要来源是外部的概念，其中包括石油码头的运营，油轮事故，含油废物船舶的运行排放，钻井时意外漏油因此，我国和国外采用的海洋环境控制系统仍然基于这样一个事实，即所谓的零排放技术应该能够充分确保海上石油和天然气生产的安全。但实际上，零排放技术和符合最大允许浓度 (MPC) 的要求都不能完全确保海上油气田的安全，因为不必要地排除了不同性质的危险。这些是从海洋深处突然排放的有毒地层流体 (地下水，石油和天然气)。

关键词：海洋环境，污染，地层流体，预测。

Annotation. *The Caspian Sea is the largest enclosed reservoir on Earth located in the inner region of Eurasia, which separated in the average Pliocene about 5.6 million years ago and is distinguished by the originality and uniqueness of the fauna inhabiting it, the presence of the richest reserves of renewable biological resources and non-renewable mineral resources. Current trends in ensuring environmental safety of marine activities usually rely on the notion that the main sources of oil pollution of the seas are external, which include operations at oil terminals, tanker accidents, operational discharges from ships of oily waste, accidental oil spills on drilling platforms, etc. Therefore, the marine environmental*

control system adopted in our country and abroad is still based on the fact that the so-called zero discharge technology is supposedly able to fully ensure the safety of offshore oil and gas production. But in fact, neither the technology of zero discharge, nor the requirement of compliance with maximum permissible concentrations (MPC) does not fully ensure the safety of offshore oil and gas fields, since unnecessarily exclude the danger of a different nature. These are sudden discharges of toxic formation fluids (groundwater, oil and gases) from the depths of the seas.

Keywords: *marine environment, pollution, formation fluids, forecast.*

State of the problem

Information about sudden emissions of oil and gas from the depths of the seas has been known since ancient times. Such accidents are accompanied, as a rule, by shifts of the subsoil, and are protracted. Despite the steady increase in the number of such accidents, the methodology for predicting hazardous emissions of formation fluids and subsoil movements has not yet been developed. Even after a detailed study of structural geology and lithology of deposits using modern methods of marine geophysics and exploration drilling, the discovery of oil and gas deposits is carried out largely blindly, without precise knowledge of the geomechanics of the rock mass and the mode of formation fluids. The real danger is usually estimated in hindsight, after putting the field into operation. In addition, it is now becoming increasingly clear that the risk of discharge of formation fluids increases as the extraction plant ages, and is most characteristic of abandoned extraction plants. But, unfortunately, there are currently no effective ways to suppress such a danger and to reclaim obsolete industries.

In essence, the created abnormal situation is fixed by the “Safety Rules in the Oil and Gas Industry” (SR 08-624-03). It imposes strict requirements of the Gosgortekhnadzor of Russia for the design of well construction (Section 2.2), as well as for the prevention of gas-oil and water manifestations and the open flow of wells (Section 2.7.7), but at the same time it does not clearly indicate the methods for implementing such stringent requirements. The gap is also seen in the environmental acts of our state: they also do not specify an algorithm for practical actions in abandoned marine production plants. Therefore, following vague "rules", today entrepreneurs are forced to act at their own peril and risk, relying on luck and fortune. Fountain hydrocarbon emissions (most often gaseous) account for 44.7% of cases of accidents and disasters at sea fields. Most of these emissions (57%) end in fire. At the same time, people die, the drilling rigs and industries are destroyed [Golubov, 2009, 2014; Ivanov, Terleeva, 2015; Lobkovsky et al., 2015]. According to Rostekhnadzor, in recent years, on the land of Russia, the average number of uncontrolled emissions was 5.5, and explosions and fires - 5.1 [Bogoyavlensky, 2014, 2015]. With the current expansion of the oil and gas industry on the shelf of the Arctic, Far Eastern, southern and western seas of Russia, the need for a reliable forecast of such emergencies is more than obvious.

P.P. Shirshov RAS Institute of Oceanology, in collaboration with the Institute of Dynamics of Geospheres of the Russian Academy of Sciences, "SCANEX" RDC, Roscosmos, Rosprirodnadzor, Institute of Geography of the Russian Academy of Sciences, Institute of Water Problems of the Russian Academy of Sciences, M.V. Lomonosov Moscow State University, the Scientific Research Center "Planeta" of Hydromet of the Russian Federation and other scientific organizations, is the main executor of the system of multi-level environmental and geodynamic monitoring of the shelf areas involved in the development of oil and gas resources. The arsenal of modern methods and technical means of such monitoring, used by the IO RAS, includes ship, underwater, satellite, seismological and stationary observations using bottom and buoy stations.

The basis for these studies is a number of documents: the Framework Convention for the Protection of the Marine Environment of the Caspian Sea (Tehran Convention) to preserve and prevent pollution of the marine and coastal environment of the Caspian Sea, Maritime Doctrine of the Russian Federation for the period up to 2020, approved by the President of the Russian Federation on July 27, 2001 (Or-1387), as well as the Minutes of the meeting of the Marine Board under the Government of the Russian Federation of October 28, 2005 "On the creation of an integrated security system for oil and gas complexes on the continental shelf." This protocol prescribed, in particular, the use of offshore drilling platforms as technological carriers of the system of integrated multi-level environmental and meteorological, and in seismically active zones even geodynamic monitoring.

However, the steadily increasing scale of pollution of the World Ocean and its inland seas with oil coming from the seabed [Nemirovskaya, 2013], as well as a number of accidents in the offshore oil and gas fields [Bukharitsin, 1986, 1988, 1992, 2002; Bukharitsin et al., 2015; Golubov, 2009, 2014; Bogoyavlensky, 2014, 2015; Ivanov, Terleeva, 2015] convince of the need for more stringent requirements for tracking the state of the subsoil even within the stable blocks of the earth's crust. In this regard, the Minutes of the meeting of the Security Council of the Russian Federation of December 9, 2006, chaired by President of the Russian Federation V.V. Putin "On measures for the development of the continental shelf of the Russian Federation" has been approved. This protocol, developed at the initiative of the IO RAS, emphasized the need to predict the environmental impact of technogenic processes associated with obtaining of hydrocarbon deposits. The main elements of a multi-level system, i.e. satellite, surface, underwater, downhole and ground-based geodynamic monitoring have already been implemented and are operating at offshore oil and gas fields in the Caspian Sea, which are operated by the Lukoil oil company. Following the recommendations of the State Ecological Expertise of Rosprirodnadzor, the company's management in cooperation with IO RAS in 2012, for the first time in Russia, approved the "Regulations for Geodynamic Monitoring" at the Y. Korchagin deposit. This is done, even despite the fact that the field is considered to be a part of relatively stable young Scythian-Turan plate. At present, this company is implementing such regulations in other Caspian offshore fields.

Forecast Methodology

Attempts to improve the reliability of the prediction of emergency movements of the subsoil and sudden emissions of reservoir fluids at offshore oil and gas fields are conducted at the junction of the methods of marine geology and geophysics, oceanology, and geomechanics. It is aimed at studying the features of fluid dynamics of sedimentary oil and gas basins, as well as the geological conditions, mechanisms and precursors of griffon emissions of formation fluids from the depths of marine oil and gas fields.

In the general case, in fluid-gas sedimentary artesian basins, fluid dynamic systems of four main types are distinguished: a) open gravity-convection; b) half-open elision; c) closed compression; d) hydrothermal convection [Bagdasarova, 2000; Golubov, 2009; 2014; Gurevich, Kraychik, 1987].

In systems of open gravity-convection type, the pressure distribution directly depends on the weight of the liquid column (for a given distribution of its density) and on the pressure loss during filtration. Fluids, and this is mainly groundwater, here have a connection with the surface. The heterogeneity of their density is due to differences in salinity, gas saturation, temperature, uneven terrain, etc. Against this background, the usual movement of groundwater in the artesian basin from the feeding areas to the sources of their discharge is carried out. The position of the latter under the seabed is easy to determine on the basis of structural maps of the aquifer or aquitic horizons, usually obtained from seismic survey data in combination with data from marine geothermy and hydrochemistry.

The semi-open systems of the elision type are confined to the areas of the newest descending tectonic movements, where a powerful sedimentary cover continues to accumulate. Since the compaction, as well as the formation of porosity of the cover rocks, has not been completed, of them, groundwater flows are still being squeezed out, which move from the axial parts of the deflections to their wings, and can be unloaded at the bottom of the sea. Numerical methods for estimating the time of nucleation and intensity of elisional flows are based on knowledge of the features of the catagenesis of clay minerals, and are now well developed by lithologists, especially in the works of Kholodov [2006, 2013]. He, in particular, on the example of the Cenozoic strata of the Pre-Caucasus, distinguishes three types of elisional transformations, corresponding to the compaction of clays, coals and evaporites. It is also clearly shown why and how these transformations are accompanied by the formation of abnormally high zones (AHRP) and abnormally low reservoir pressures (ALRP), whose sharp drops (combined with catagenetic transformations of plastic sedimentary rocks in the conditions of closed physicochemical systems) give rise to many forms of sandy diapirism. Such a phenomenon, undoubtedly, can also manifest itself under the bottom of the neighboring Caspian waters, where the cover of Cenozoic sediments is similar to that developed in Ciscaucasia.

Since the foci of potential fluid discharge of the elision-type systems are confined mainly to the sides of sedimentary basins, the coordinates of these foci are easily determined from marine seismic survey data.

Closed compression type systems contain high-pressure fluids trapped in a closed void space of rock massifs. These systems typically differ in AHRP fluids, which far exceed the hydrostatic pressure (exerted by the weight of the liquid column in height from the measuring point to the surface of the liquid). As a rule, AHRP zones are shielded by powerful fluid guards in the form of practically impermeable thick layers of rock salt or clay.

Opening and penetrating AHRP zones remains dangerous. Evidence of an incident at the Tengiz field, located on the eastern shore of the Northern Caspian. Here, on June 24, 1985, from a depth of about 5 km from well №37, under pressure of almost a thousand cubic meters, oil and natural gas were poured into a powerful fountain, saturated with hydrogen sulfide. The fountain soared to a height of more than 200 m, threw a multi-ton string of drill pipes out of the well to the surface, turning them into "macaroni", demolishing nearby buildings, and raging for long months. A team of liquidators was thrown at the taming of the accident, equipped with a heavy-duty air transport to deliver equip-

ment from the European "Cameron" warehouse worth \$ 2 million. The accident was eliminated only after four hundred days, which back then thwarted the plans to increase oil production in Kazakhstan from 18.7 million tons in 1981 to 25 million tons in 1985 and aggravated the decline in oil production in the USSR, outlined from 70s (Fig. 1).

In the foreseeable future, a similar release of high-pressure reservoir fluids from the subsalt structural floor of the southern side of the Caspian Trench may also occur in the Northern Caspian at the Kashagan field, which the authors predicted several years ago [1-5].

Fig. 1. A picture of a burning oil fountain at the Tengiz field, taken by P. Bukharitsin. from the plane, at a height of 150 meters.



Also indicative is the catastrophic collapse of the “60 years of Azerbaijan” self-propelled floating drilling rig (SPFDR), which occurred on September 9, 1983 near the eastern coast of the Middle Caspian (Fig. 2). Drilling in the depths of the young Turanian plate of pre-Jurassic rocks of the Permian-Triassic complex and the Paleozoic crystalline basement was scheduled. The drilling point was located 23 km from Cape Rakushechny, where the sea depth is 43 m. The estimated drilling depth was 4500 m. But at a depth of 445 m, when the Oligocene clays penetrated, the washing liquid was interrupted by a breakthrough of gas-saturated formation fluids. With a weighted mud solution, it was possible to drill another 60 m, descend the casing with a diameter of 508 mm and put a well on the hardening of the cement, which usually takes from 24 to 30 hours. But after six hours, the movement of the mud from the annular space began again.



Fig. 2. *Place of the accident of the self-propelled floating drilling rig (SPFDR) "60 years of Azerbaijan."*

Soon a gas fountain rose from the well to a height of 50 meters and an intensive erosion of the soil began under one of the drilling supports, the tower tilted, the soil under the second support was washed away, and the tower collapsed. The accident occurred at night in stormy weather. Two people died. Vessels arrived were saving people from the water all night. Rescuers set gas on fire so that it does not poison the atmosphere. After 5 days, the torch went out and the discharge dried up. But on 5.08.1991, the emergency well fired again. CASPNIRH divers have discovered that the griffin of underground fluids is still valid here. The metal structures of the tower did not undergo fouling by marine organisms, which is explained by the continuous activity of the griffin, which releases toxic gases and groundwater from the depths of the sea.

Finally, we note the flooding of the Caspian Sea's extensive coastal strip of land in front of a protective dam on the northern shore of the Buzachi Peninsula in the area of the Kalamkas oil field. This dam began to prop up the flow of groundwater, discharging from land to the Caspian Sea, provided for the waterlogging of the coast and soon turned out to be essentially not on the coast, but in the middle of water. Back in 1972, geologist Bugar described on this peninsula a 6-kilometer strip of gas-water griffins, which "dives" under the bottom of the Caspian Sea. And so, quite recently there was an accident. In the middle of March 2019, at a well in the "Kalamkas" field located in the Tyupkaragan district of the Mangystau Oblast of the Republic of Kazakhstan, four kilometers from the Caspian Sea, an extraordinary situation occurred with the release of gas-water mixture. 13 griffins formed around the drilling site. There was a fire. The accident was completely eliminated only on April 4, 2019.

Conclusion

Many such accidents convince of the need for an early assessment of the state of fluid-dynamic systems of closed compression type even before the start of well drilling. To solve this problem in its first approximation, in our opinion, there are three possibilities.

Recommendations

1. It is reduced to the determination of the area where there are mandatory conditions for the formation of AHRP: 1) the presence of a collector-bed (reservoir), completely isolated by the regional fluid seal; 2) signs of deformation of this reservoir (i.e., an increase in the mass and volume of fluids in it and/or a decrease in the volume of the reservoir itself with a fixed mass of fluids in it). It is also easy to determine the places where the regional tire is broken by the most recent faults and, therefore, the re-formation of AHRP zones, inter-layer flow of fluids and their possible emissions to the sea surface are possible.

2. This opportunity is provided by the results of satellite monitoring of the appearance of oil spots on the sea surface, which will be discussed below.

3. This opportunity is provided by using the conceptual model of the geomechanical evolution and stability of the oil and gas system [Melnikov, Kalashnik, 2008], in which the energy W is adopted as the main controlling parameter [Letnikov, 2004]. The practical application of this model is reduced to the determination of the expected conditions when the control parameter W reaches the limit values at which the oil and gas system, as it is operated, enters an unstable non-linear development stage, i.e. when a rock mass bifurcation occurs, and the field with its fluids will go "hawking".

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新设计的径向剪切压力机构的自动控制系统
AUTOMATED CONTROL SYSTEM OF THE RADIAL-SHEAR
PRESS MECHANISM OF A NEW DESIGN

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注解。 本文提出了一种结合压力的新型径向剪切磨机,可以制造出高变形度的优质有色金属棒材和管材。 基于组合楔形液压机构,设计了轧机压力装置的控制系統。 选择型号FL86STH作为步进电机,由可编程控制单元SMSD-4.2控制,在驱动器模式下运行,带有一组标准逻辑控制信号“步进”和“方向”。 已经证明控制辊隙具有增加的刚度。

关键词: 轧制, 压制, 钢坯, 棒材, 推动机构, SMSD-4.2控制单元, FL86STH步进电机。

***Annotation.** In this article, a new radial-shear mill combined with pressing is proposed, which makes it possible to manufacture high-quality rods and pipes of non-ferrous metals with high degrees of deformation. Based on the combined wedge-hydraulic pressure mechanism, a control system for the rolling mill pressure device has been designed. Model FL86STH was selected as stepper motors, controlled by programmable control units SMSD-4.2, operating in driver mode with a set of standard logic control signals “step” and “direction”. It has been proven that the control roll gap has increased rigidity.*

***Keywords:** rolling, pressing, billet, bar, pushing mechanism, SMSD-4.2 control unit, FL86STH stepping motor.*

One of the most effective ways to manufacture rods and pipes from colored metals is helical rolling [1]. For the first time, the method of helical rolling of continuous bodies in a three-roll mill was proposed by the All-Russian Research and Design Institute of Metallurgical Engineering (VNIIMETMASH) for rolling periodic profiles with a diameter of 10-20 mm. At the Bauman Moscow State Techni-

cal University and the Moscow Energy Institute solid rods with large coefficients of drawing per pass (up to 12) and with an offset axis were rolled with helical rolling. For the production of rods, helical rolling mini mills are effectively used, casting aggregates with helical rolling stands developed by VNIIMETMASH.

At the end of the twentieth century, researchers at the Moscow Institute of Steel and Alloys developed a series of radial-shear rolling mills (RSR) intended for the production of bars from metals and alloys [2].

One of the most dynamic and productive stages in the development of metal forming is associated with the process of radial-shear rolling (RSR) [2]. The real contribution to the development of science and technology, the practical significance of the achieved results allow RSR to be attributed to the fundamental achievements of the world level.

It should be noted that RSR is defined as a special case of stationary helical rolling in the area of large feed angles (16 ... 18 degrees and more) in rolls with special calibration for deformation of solid billets of constant cross section [2]. Increasing the feed angle from 6-11 to 21-24 degrees results in a consolidation of the structure by more than 300%, which increases the technological plasticity of the blanks. At the same time, RSR provides the development of the structure of almost any deformable metals and alloys. One mill with two or three sets of work rolls ensures the prompt production of round bars with more than 70 finished diameters with an unlimited number of intermediate roll sizes. By deformation, one stand replaces at least five to seven longitudinal rolling stands, the total mass of which exceeds the mass of the RSR stand by more than 15 times.

According to the authors of [3], the helicoidal outflow of metal in the deformation zone along specified trajectories with a slowing down of the outer layers of the workpiece and the acceleration of the internal ones creates the effect of volumetric macro-shift. Elements of the structural composition of the metal takes the form of isotropic isolated particles of high dispersion; at the same time there is a complex increase and stabilization of the physico-mechanical and service properties of the metal. The highest level is achieved in plastic and viscous, as well as correlation related operational properties.

A study of the design of radial shear mills (RSM) showed that the main disadvantage of these mills is the large size and high cost of equipment. It was not possible to realize in industrial conditions continuous rolling on these mills. Nevertheless, industrial tests of these mills showed the effectiveness of the use of helical rolling for the deformation of non-ferrous metal bars.

The analysis of existing methods for manufacturing rods and pipes from non-ferrous metals, RSR solid billet methods made it possible to conclude that to revive a promising deformation method for RSR non-ferrous metals, it is necessary to create a new equipment that would meet the following requirements:

- deformation of the blanks should be carried out in a 3-roll stand;
- work rolls and elements of the mill structure should take significant loads and have high wear resistance;
- heating equipment must provide heating of the workpiece before rolling to the appropriate temperature depending on the grade of metals and alloys.

In the Kazakh National Research Technical University named after K.I. Satpayev, the design of compact RSM combined with pressing (Figure 1) was developed[4]. The design of this mill was carried out on the basis of theoretical calculations, taking into account the results of the analysis of domestic and foreign design solutions.

In the design of the equipment, there was the following basic requirements:

- possibility of deformation of billets with a diametrical size of 40–60 mm to obtain bars with a diameter of 8–12 mm;
- sufficiently high strength and rigidity of the rolling stand mechanisms and assemblies;
- the need for high temperature heating of the blanks before rolling;
- providing conditions for fast changing of work rolls.

The proposed RSM of a new design is a complex of rolling and heating equipment, where by combining hot-helical rolling on RSM and pressing, rods or pipes of small diameters of ferrous or non-ferrous metals with a fine-grained structure are obtained. RSM for continuous extrusion of bars and tubes contains (Figures 1, 2 and 3): working stand 1, press die 2, bases 3, spindles 4, gearmotors 5, workpiece feeding table 6, roller unit 7. The three-roll working stand of this mill consists of a frame, in the bores of which work rolls 7 are mounted through 120 °. The work rolls are mounted on the cushions 8, the torque for them is transmitted through the spindles 4 from the gearbox motor 5. The stand of this mill is designed with the possibility of location of the rolls in the stands with different angles to the axis of rolling and their rigid fixation. In this regard, this stand: 9 - vertically movable plates; 10 - wedge moving plates; 11 - sled; 12 - fixed plates; 13 - screws; 14 - sprockets; 15 - hydraulic pressure mechanism; 16 - hydraulic cylinders for rotation of the rolls; 17 - beds.

It should be noted that the die of this mill has working sections in the form of successively positioning, cross-sections of gradually narrowing truncated cones with non-parallel bases and having a large or small forming crosswise, and a calibrating section. This die with the work rolls form a combined installation.

Pressing rods and wires of steel and alloys on the RSR mini mill is as follows. The heated billet is fed into the gap between the rollers and is deformed with the projections and depressions of the wavy-cone-shaped section and the calibrating section of the rolls. The rolls, rotating in their rotational movement, rotate and deform the metal of the workpiece rotationally and progressively and squeeze them through the hole in the die, thereby obtaining ready-made rods or wires.

Rolling the workpiece in wavy-cone-shaped sections of the rolls, while rotating the rolls in one direction, provides translational and rotational movement of the workpiece in the direction of rolling, efficient grinding of the structure throughout the section of the workpiece due to the development of shear deformations and reduction of the rolling force. Efficient grinding of the structure ensures the formation of a fine-grained structure in rods or pipes, and thereby obtaining of high-quality products.

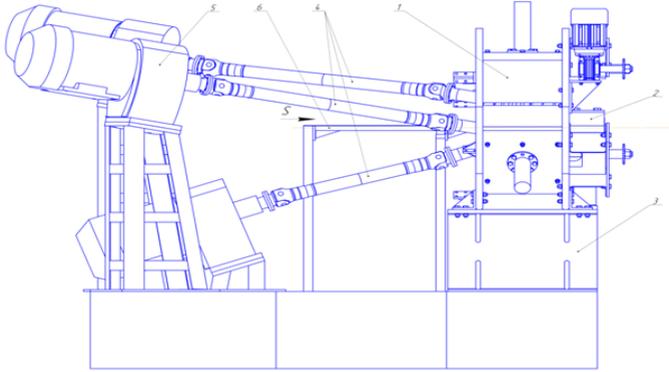


Figure 1 - Mini mill for radial shear extrusion of rods or wires

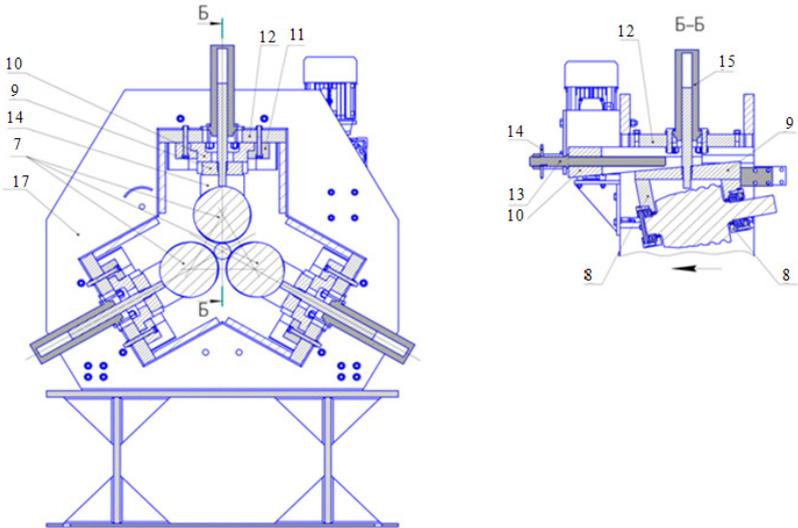


Figure 2 - Front view of the stand of the mini mill for radial-shear extrusion of rods or wires

In the course of designing the new RSM, using the computer simulation system Patran Nastran, the stress-strain state of the heavily loaded elements of the new mill was calculated. On the basis of the calculation, it is proved that the voltage values occurring in the details of the RSM stand in the process of pressing rods and pipes do not exceed the maximum allowable stress, that is, the strength characteristics of the stand of the new mill satisfy the condition of mill strength. It is established that the coaxial arrangement of the gearmotors of the main drive and sloping work rolls minimizes dynamic loads, noise and vibration during rolling.

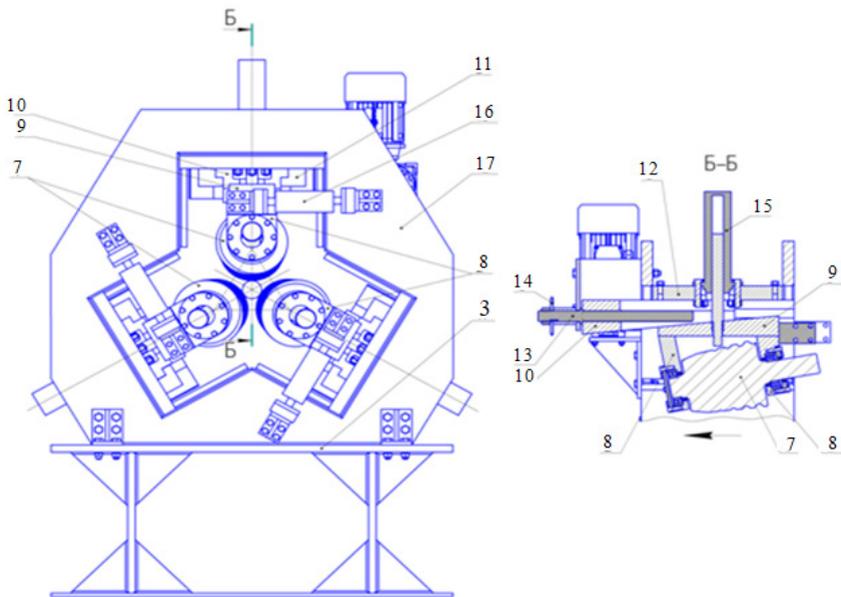


Figure 3 - Rear view of the stand of the mini mill for radial-shear extrusion of rods or wires

It is known that modern rolling mills cannot do without computer control of their mechanical units, temperature and deformation modes, etc. [6]. In order for temperature-deformation rolling modes calculated on the basis of scientifically grounded, complex mathematical models to be realized, sensors, hydraulic and electric actuators with servo-control are needed. In addition, the control system should have a modern human-machine interface, on-line archiving tools for the technological parameters array and a standard interface for accessing these parameters from the shop-side automated control system.

The purpose of this work is to create an automated control system for the pressing mechanism of a radial-shear mill of a new design.

In the design of the proposed rolling mill, considerable attention was paid to the device, which ensures the installation of the rolls to the required distance. The press mechanism of the mill must ensure the accuracy and speed of the installation of the rolls when changing their solution, which is achieved by moving the three rolls. When rolling long rods, when adjustment of the corresponding setpoint of the gap between the rolls directly during the rolling process is required, the speed of the said adjustment is of great importance for the accuracy of the finished rod and high mechanical performance along the length of the finished steel.

Currently, electromechanical screw-nut and hydraulic pressure devices (HPD) have been widely used as pressure mechanisms of rolling mills [6].

Electromechanical pressure devices of many mills, with a significant frequency of deviations in the dimensions of rolled products, all the time work in acceleration and deceleration modes, i.e. with increased load [6,7]. This complicates the operation of such devices on high-speed RSM, as a result of which it is necessary to envisage wide dead zones, i.e. reduce regulation accuracy.

HPD is more common. These devices have low inertia, high acceleration up to $500 \text{ mm} / \text{s}^2$, which is 250 times more than in electromechanical push mechanisms [6,7]. In HPD stands, rolling is ensured with dimensional accuracy along the length of rolled products. The analysis of HPD used in the rolling production revealed the following shortcomings of these devices: the complexity of the design of hydraulic cylinders, the low reliability of the piston position sensor during shock loads in the cages and the inaccessibility for control and maintenance.

In the designed mill, a combined wedge-hydraulic push mechanism was used. In the wedge pushing mechanism, the vertical movement of the roll cassettes is carried out by linear movement of the wedge movable plates with an angle of inclination from 8 to 30 °. In this case, the linear movement of the wedge movable plates is carried out by a chain transmission from a stepping motor (SM). Pressure devices with a wedge mechanism, driven by an SM and recording vertical movement of work rolls by means of linear displacement transducers are potentially an advantageous solution for RSM for rolling bars and wires where large movements of the work roll are not required. Cheap SM provides accurate movement, quick start / stop / reversal, the possibility of smooth rotation and accurate positioning, and linear displacement sensors allow you to record the movement of the roll with an accuracy of 0.001 mm. The wedge mechanism of such a pressure device will provide high rigidity due to the large contact area of the wedges, over which the entire load is distributed. In addition, the device is durable due to the absence of gaps in the connecting elements in contrast, for example, from the screw mechanism. This device contains three movable working wedge-shaped plates, which ensures precise positioning of the work rolls of the stand during rolling of bars.

Moving of the cassettes, perpendicular to the axis of the stand along radial bores, with wedge movable plates with an inclination angle of less than 8° , leads to a sharp decrease in single reductions during rolling of the helical rolls (Figure 2 and 3). The reduction of single compression requires with a large amount of drawing to extrude the metal through a die to obtain rods and wires of the required size. For such drawing, large pressing forces are needed. Small in size compression of the workpiece during rolling in a spiral roller can not create such large pressing forces through the die. It should be noted that such small unit reductions can be equal to the critical degree of deformation, leading to the formation of a different-grain structure, which degrades the quality of the rods and wires produced.

Moving the cassettes, perpendicular to the axis of the stand along the radial bores, with wedge movable plates with a tilt angle of more than 30° , leads to a sharp increase in the unit reduction during rolling of the winding rolls of this mill. With such a reduction from the side of the metal, the rolls are acted upon by monotonously increasing radial and axial forces directed perpendicularly to the axis and against the course of rolling. The effect of these efforts through pillows and cassettes is transmitted to a movable plate, fixed by a hydraulic cylinder. Great efforts lead to an increase in the elastic deformation of heavily loaded cassette elements, wedge moving plates, hydraulic cylinders and, thus, their rapid failure.

In the designed RSM, the hydraulic pressure mechanism showed in [8] was used. This mechanism contains SM, a screw transmission, a slider, a double-arm lever and a throttling valve. In this case, the system is equipped with a bracket rigidly fixed on the housing of the pressure device. This bracket is connected through two mutually perpendicular springs with a slider, movably mounted on two guides and connected through a double-arm lever with a throttling valve.

In the initial position, the piston of the hydraulic cylinder of the control system is in a stable state of power equilibrium [8]. The upper cavity of the pressure cylinder is permanently connected to the pressure tank, and the lower cavity is connected to the outlet of the throttling valve.

When testing the control signal supplied to the control motor, the rotation of its shaft is transmitted through the bellows coupling to the drive screw transmission screw - nut, which converts the rotational movement of the screw to the translational movement of the slide [8]. When moving the slider, the double-arm lever connected to this slider and with the valve of the throttling valve is turned through prismatic supports. In this case, the valve of the throttling valve under the action of its spring is shifted from the middle position. The force action from the slide on the double-arm lever and from the double-arm lever to the slide valve of the throttling valve is transmitted through prismatic supports. Depending on which way the slide moves, the pressure throttling valve either opens and the pressure fluid enters the lower cavity of the hydraulic cylinder of the control system and the piston moves up, or the lower cylinder of the hydrau-

lic cylinder of the control system communicates through the drain slot of the throttling hydraulic distributor with the drain line and piston moves down. In this case, the lower rod acts on the roll system, increasing or decreasing the roll gap.

After handling the control signal of the control motor, the piston of the hydraulic cylinder of the control system moves until the valve of the throttling valve is in its middle position [8].

The characteristic of the spring must be chosen in such a way that it balances the lever acting through the double-shouldered lever, the prismatic supports and the valve of the spring of the throttling valve. [8].

It should be noted that the hydraulic clamping of cassettes with rollers to fixed and wedge moving plates with a force that provides high contact stresses at the joints, and volume-compressive stresses in heavily loaded elements of the cassettes, fixed and moving plates, which significantly increases the rigidity of the stand and reduces wear on conjugate surfaces due to the lack of gaps between it. The use of a single chain transmission in combination with hydraulic cylinders for horizontal and vertical movement of the movable plate on the sled, allows to accurately install the cassette in the radial bores of the beds.

Consequently, the proposed mini-mill with rational design parameters has high rigidity and the ability to deform rods and wires from metals and alloys with the formation of a uniform, ultrafine-grained structure. The mill is easy to manufacture and install, affordable and reliable in operation.

It can be noted that the proposed mini mill of radial-shear extrusion with spiral rollers and the matrix of the proposed design provides for obtaining high-precision rolled products with geometrical dimensions, the presence of a mechanism for adjusting the position of the roll relative to the rolling axis reduces the wear of the roll and die.

Continuous-discrete nature of the deformation, creating a localized contact surface with a spiral roller, limit the level of effort, torque and power rolling. With comparable reductions, the level of energy-power parameters during radial-shear pressing is 1.5 - 2 times lower than when rolling barrel rolls of existing radial-shear mills. Accordingly, the metal consumption of equipment and the power of the main drives are reduced.

At the current stage, the integration of the designed pressure device into the automated control system of the mini-mill is carried out. Model FL86STH was chosen as stepper motors, controlled by programmable control units SMSD-4.2, operating in driver mode with a set of standard logic control signals "STEP" and "DIRECTION".

For the organization of feedback in order to quickly adjust the position of the work roll, it was decided to use compact linear displacement transducers LIR-19, made with a rod [6]. Their installation will be made in the slots specially made in the work stand bed so that the extended LIRs rods touch the roll barrel at one point. For each of the rods, an adapter extension was made, the end of which is a roller for

smooth sliding on the roll surface during its rotation. The algorithm of the wedge-hydraulic pressure device as part of the control system is as follows: The signal from the LIR sensors is fed to the high-speed inputs of the main controller of the ACS by a mini-station, which compares it with the setpoint and, in case of detecting deviations of the measured and other parameters, generates and sends a control signal to the SMSD-4.2. Drivers control stepper motors, setting the desired value between roll gap.

Conclusions

1. Designs of pressure devices using a pair of screw-nut and electric motors, as well as hydraulic clamping devices are known. However, their shortcomings make it necessary to look for alternative methods of organizing roll gap control.

2. On the mini mill of radial-shear rolling of the rod, the combined design of the pressing mechanism and the control of the roll gap, characterized by increased rigidity, is proposed.

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